

# NZ Child and Youth Mortality Review Committee

## National data overview

PREPARED BY THE NZ MORTALITY REVIEW DATA GROUP

2012



# Methodology

## Overview

The Child and Youth Mortality Review process has evolved since the Committee was established ten years ago. Many people and organisations are involved in providing information, reviewing deaths, collating information, and analysing and reviewing collated data. Particular processes that are central to mortality review are: review of individual deaths in the District Health Board region where the person resided, and national data collection and collation. Steps that are undertaken in the context of case review and data collation include:

1. National organisations and some individuals provide information directly to the Mortality Review Data Group (MRDG).
2. The information held centrally is available for use at local review meetings through CYMRC-appointed DHB co-ordinators.
3. Following the review of each death, CYMRC co-ordinators add further information to the national database.
4. The MRDG collate and analyse information held in the national database for the CYMRC.
5. The CYMRC reviews the collated case information as well as locally identified issues and recommendations. This provides a detailed overview of regional and national trends, which can be used to inform prevention strategies and support recommendations at both a local and national level.

## Data collection

The Mortality Review Data Group collect, securely store and link case information about all child and youth deaths from 1 January 2002 for the CYMRC. Information comes from a variety of sources, including:

1. Births, Deaths and Marriages (Department of Internal Affairs)
2. Ministry of Health
3. Child, Youth and Family (Ministry of Social Development)
4. Coroners
5. Coronial Services (Ministry of Justice)
6. Water Safety New Zealand
7. Ministry of Transport
8. Local child and youth mortality review groups
9. Families of the deceased.

Information is provided in varying formats as well as being sent at times and time intervals that suit the data source. A weekly extract from Birth, Deaths and Marriages is the primary source of notification of deaths. Organisations such as Water Safety New Zealand and the Ministries of Health and Transport routinely provide selected information on all relevant deaths. The CYMRC continues to consider other suitable data sources in addition to these and to liaise with other organisations.

Some source providers have changed data format or have only recently started providing information. For example Child, Youth and Family provide information for cases which they have had contact with from June 2006 onwards. (The age range considered has gradually expanded from infant and preschool to include deaths in children and youth up to 24 years of age in 2009.) The majority of coroners have provided information on

coronial cases from January 2003. The Mortality Review Data Group enters and codes all information from the disparate and often conflicting data sources, in order to help facilitate local review as well as national reporting.

**Figure M.1:** Flow of case information from sources to the Mortality Review Database

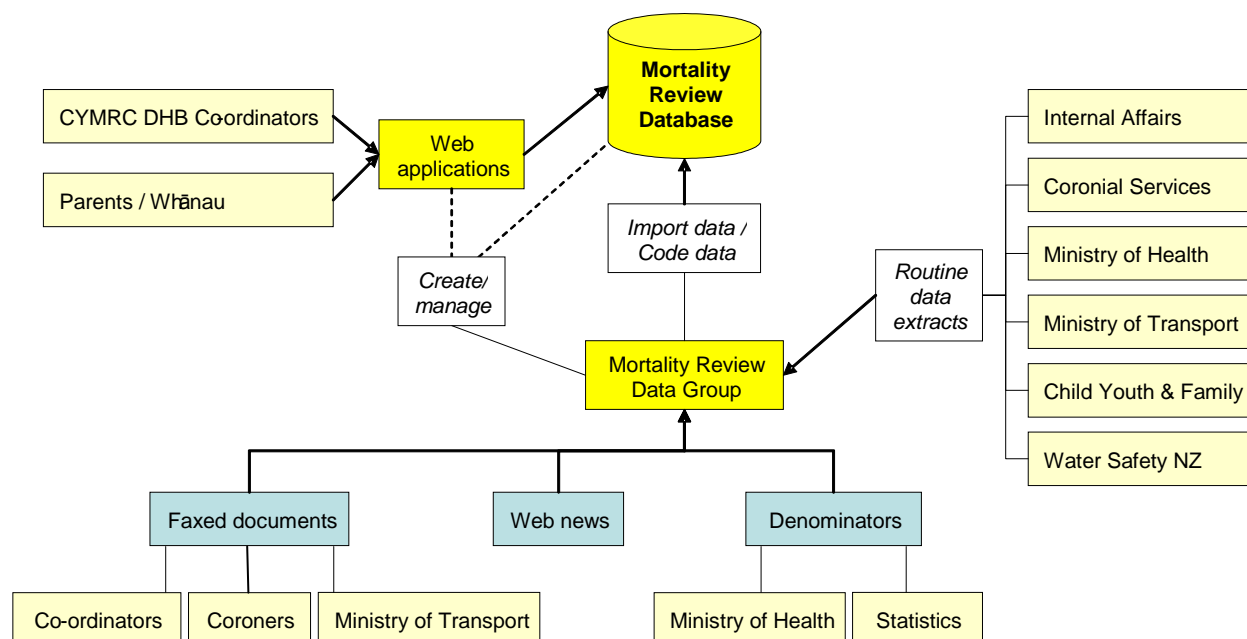


Figure M.1 illustrates these sources of information and some of the processing. The Mortality Review Data Group maintains two websites which allow individuals to directly contribute information. A link on the public website (<http://www.hqsc.govt.nz/our-programmes/mrc/cymrc/>) allows families to provide feedback on health systems. The DHB co-ordinator adds further details both before and after local review, via a private website. As well as data extracts - directly entered data and coded data - the information system also includes documents faxed by Coroners (pre-2010), electronic format coronial case information (post-2010), copies of news reports, and denominators (provided by Statistics New Zealand and the Ministry of Health).

The Mortality Review Data Group identifies the NHI of the person for which each item of information is received. They import data into the Mortality Review Database and link the various sources of information that relate to each individual. Data are regularly cleaned to eliminate duplicate records, follow up on missing details, and ensure completeness and internal consistency.

When interpreting CYMRC data it must be remembered that it is derived from a database that is constantly being updated. As well as details of new cases, there can also be new information for existing cases, and at times changing information for existing cases. The result of this is that details can change from year to year, even for cases whose death was some years previously. This is particularly true of cases that require an inquest, as in some cases this process may not be completed until years after the death. While this report includes deaths that occurred until 31 December 2011, the 2011 data is the least complete of any year, for the above reasons. The incompleteness of the data is not randomly spread across all causes. Deaths that are referred to the Coroner, such as sudden unexpected deaths and some injury deaths, are less likely to have complete cause of death information available quickly. Therefore, information relating to deaths in 2011 in particular needs to be interpreted with caution. This also means that consecutive annual reports may have slightly different numbers in any one category, but the most recent reports will be the most accurate.

## The local review process

The CYMRC review process relies on information from the DHB of residence of the deceased child or youth. The co-ordinators of the local child and youth mortality review groups collect information from local organisations involved in the life and death of the individual. Some of the new information gathered as part of the local review process is entered into the Mortality Review Database.

Each Local Child and Youth Mortality Review Group (LCYMRG) has an appointed chair and co-ordinator. When the death of a child or youth aged between 28 days and 24 years occurs within a co-ordinator's region, the co-ordinator will access the secure database to gather initial information on the deceased. The co-ordinator will then initiate information requests to the various members of the local child and youth mortality review group who each act as a representative of their particular organisation.

As official agents of the CYMRC, the local child and youth mortality review group members can access their organisation's records to identify and collect information that may be relevant to the review process. The members bring this information to the review meeting and provide relevant details, as needed, for the review. Each review is facilitated by the local chair, whose task it is to bring together all the relevant factors relating to a death.

Information shared in the context of the review meeting must remain confidential to the process. Issues identified in the meeting that require urgent action from participating agencies, such as aspects of illegal activity or the safety of others, must be dealt with outside the review process using the normal inter-agency protocols and procedures. This ensures that participants do not compromise the no-blame focus of the review process or the confidentiality agreement signed as a condition of agent status. The process is exempt from Official Information Act requirements, but complaints about procedures can be reported to and investigated by the Ombudsman.

A review group might meet several times before all the information has been gathered on a case. Once all the information has been gathered, the group may choose to highlight issues or make specific recommendations. Local recommendations may be delegated to specific group members if the agency they represent is needed to facilitate a response. It is important that the issues and recommendations be presented in a way that does not assign blame but rather focuses on changes that could prevent future deaths.

Once a local death review is completed, the co-ordinator will enter all the relevant data into the secure national database. In this way, issues, recommendations and follow-up actions are forwarded to the CYMRC.

The local child and youth mortality review group process allows high levels of detail about the context of death to be obtained. The process itself supports learning from cases to be acted upon locally. Although only a proportion of deaths prior to 2009 have been reviewed, the increased coverage of the local child and youth mortality review groups will allow for many more system improvements. A challenging process is to distil this detailed contextual information into recommendations that will work nationally.

## Analysis and coding

### Mortality data

The data for this report are from the Mortality Review Database. The data were extracted from the database on 1 October 2012. For the purposes of mortality review in New Zealand, children and youth are defined as those aged between 28 days and less than 25 years of age. In all tables, the year of death relates to the calendar year in which the individual died, rather than the year the death was registered. This is different to some other official collections, where the year the death is registered is used. Where neonatal deaths are included, these do not include stillbirths or terminations.

Some of the figures in this document contain historical data from the Ministry of Health (NZHIS). For deaths from 1979 to 2001 (for deaths in children and young people aged 28 days to 24 years), NZHIS-reported rates are used. From 2002 onwards, CYMRC rates are used. For infants aged zero to 27 days, NZHIS-reported rates are used for 1979 to 2006, with Perinatal and Maternal Mortality Review Committee (PMMRC) data used from 2007. Due to the different methodologies used to calculate the rates, it is possible that there is some small discrepancy in the rates between the different organisations.

## Cause of death

In response to requests for more detailed ICD-10-AM coding, the Ministry of Health data was altered in 2008 to include their mortality coding. Cause of death is now assigned using the Underlying Cause of Death from the National Mortality Collection, from the Ministry of Health. This was back-dated to include all cases in the database, not just those from 2008 onwards.

In addition, for deaths in infants less than one year of age, 'SUDI' (Sudden Unexpected Death in Infancy) was assigned as the cause of death where any one of the following ICD-10-AM codes were listed as the main underlying cause of death in the Mortality Collection: R95 Sudden infant death syndrome; R96 Other sudden death, cause unknown; R98 Unattended death; R99 Other ill-defined and unspecified causes of mortality; W75 Accidental suffocation and strangulation in bed; W78 Inhalation of gastric contents; W79 Inhalation and ingestion of food causing obstruction of respiratory tract.

If the individual was between one and two years of age, and any of the following ICD-10-AM codes were listed as their main underlying cause of death, the individual's cause of death was attributed to 'SUD' (Sudden Unexpected Death): R95 Sudden infant death syndrome; R96 Other sudden death, cause unknown; R98 Unattended death; R99 Other ill-defined and unspecified causes of mortality; W75 Accidental suffocation and strangulation in bed; W78 Inhalation of gastric contents.

The external causes of death as presented in the cause of death tables is arranged according to the International Collaborative Effort on Injury Statistics classification. This assigns ICD-10 groupings to various headings. The classification system used in this report has been used since 2011, and is slightly different to years prior to 2011; hence data from previous reports may not match exactly.

## Ethnicity

There are multiple sources of ethnicity data in the database. These are: Births, Deaths and Marriages, the Ministry of Health, Coronial records and the information entered by co-ordinators when reviewing a death. These data sources are prioritised based on evidence as to their accuracy generally in New Zealand.

## Statistics

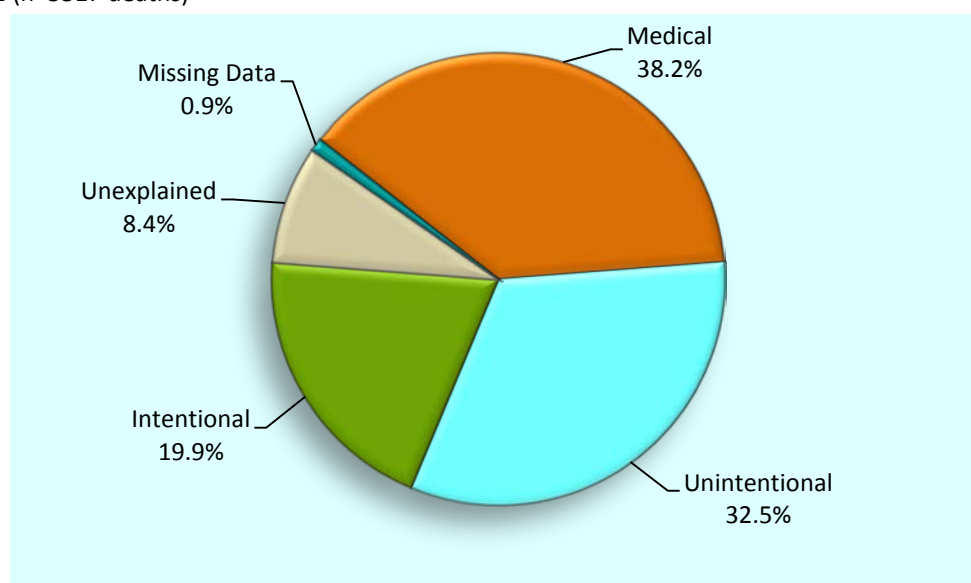
The data presented in this report were computed from the database by the NZ Mortality Review Data Group. Percentages are expressed to one decimal point. In some cases, due to rounding, percentages do not sum to 100 exactly.

The denominators used in this analysis are from two sources. The first is the number of live births in New Zealand, as supplied by the Ministry of Health. The other denominator used is a derived estimated resident population. This is calculated for each year, and is based on the Statistics New Zealand Estimated Resident Population from census years 2001 and 2006. Linear extrapolation was undertaken to calculate the estimated resident population between 2001 and 2006, and projected out to 2011. The one to four year age group denominator was calculated using the above methods to derive the under four year population, with the number of live births from each year being subtracted off this total to compute the one to four year age group denominator. Rates in this report are presented as per 100 000 age-specific population for most age groups, except for infants less than one year of age where rates are expressed as per thousand live births.

The deaths of non-New Zealand residents are excluded from the main sections of the report because the denominator in rate calculations (as above) excludes visitors from overseas. Data on this population is provided as a supplement, with rates excluded.

# New Zealand National Data Overview

**Figure 1.1:** Mortality (%) in children and young people aged 28 days to 24 years by cause of death, New Zealand 2007–2011 (n=3317 deaths)



Source: Mortality Review Database

**Table 1.1:** Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and age group, New Zealand 2007–2011 combined (n=3317 deaths)

Category	< 1 year *	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	Percentage %
Medical	360	201	93	127	230	257	1268	38.2
Unintentional injury	19	120	43	83	397	417	1079	32.5
Intentional injury	7	19	4	30	265	335	660	19.9
Unexplained	262	17	-	-	-	-	279	8.4
Missing data	11	6	-	2	4	8	31	0.9
<b>Total</b>	<b>659</b>	<b>363</b>	<b>140</b>	<b>242</b>	<b>896</b>	<b>1017</b>	<b>3317</b>	<b>100.0</b>

\*This category represents infants 28 days and older, and less than one calendar year in age

Source: Mortality Review Database

**Table 1.2:** Mortality (number of deaths and rates per 100,000 resident population), by cause of death and age group, New Zealand 2007–2011 combined (n=3317 deaths)

	< 1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%	Rate 2007–2011
<b>Medical</b>									
Infectious and parasitic disease	40	21	4	3	4	2	74	2.2	0.96
Neoplasms	10	37	32	43	70	78	270	8.1	3.50
Diseases of the blood and blood-forming organs and disorders of immune system	4	4	1	1	1	2	13	0.4	0.17
Endocrine, nutritional and metabolic diseases	11	14	4	7	16	20	72	2.2	0.93
Mental and behavioural disorders	-	-	-	1	1	1	3	0.1	0.04
Diseases of the nervous system	20	24	18	28	43	44	177	5.3	2.30
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of the circulatory system	16	16	7	13	32	41	125	3.8	1.62
Diseases of the respiratory system	56	27	11	6	17	14	131	3.9	1.70
Diseases of the digestive system	4	4	1	2	2	5	18	0.5	0.23
Diseases of the skin and subcutaneous tissue	1	-	-	-	3	1	5	0.2	0.06
Diseases of the musculoskeletal system and connective tissue	1	2	2	1	3	5	14	0.4	0.18
Diseases of the genitourinary system	2	-	-	-	1	4	7	0.2	0.09
Pregnancy, childbirth and the puerperium	-	-	-	-	-	3	3	0.1	0.04
Certain conditions originating in the perinatal period	75	6	1	1	-	-	83	2.5	1.08
Congenital anomalies	120	41	12	18	25	29	245	7.4	3.18
Symptoms & abnormal findings not elsewhere classified	-	5	-	3	12	8	28	0.8	0.36
<b>Total medical</b>	<b>360</b>	<b>201</b>	<b>93</b>	<b>127</b>	<b>230</b>	<b>257</b>	<b>1268</b>	<b>38.2</b>	<b>16.46</b>
<b>Non-intentional injury (includes unintentional, undetermined intent, legal intervention/war)<sup>#</sup></b>									
Cut/pierce	-	-	-	-	2	1	3	0.1	0.04
Drowning	5	35	3	4	20	27	94	2.8	1.22
Fall	-	5	2	2	17	18	44	1.3	0.57
Fire/hot object or substance	-	5	6	1	3	5	20	0.6	0.26
Firearm	-	-	-	1	5	1	7	0.2	0.09
Machinery	-	3	-	-	-	3	6	0.2	0.08
Transport	8	48	26	51	287	299	719	21.7	9.33
Natural/environmental	3	2	-	3	11	12	31	0.9	0.40
Overexertion	-	-	-	-	-	-	-	-	-
Poisoning	-	1	-	7	23	28	59	1.8	0.77
Struck by, against	-	4	1	-	2	4	11	0.3	0.14
Suffocation	3	12	2	12	21	8	58	1.7	0.75
Other specified, classifiable	-	-	1	-	4	9	14	0.4	0.18
Other specified, not elsewhere classified	-	1	1	-	1	-	3	0.1	0.04
Unspecified	-	2	-	1	-	2	5	0.2	0.06
Complications of medical and surgical care	-	2	1	1	1	-	5	0.2	0.06
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-	-
<b>Total non-intentional injury</b>	<b>19</b>	<b>120</b>	<b>43</b>	<b>83</b>	<b>397</b>	<b>417</b>	<b>1079</b>	<b>32.5</b>	<b>14.00</b>
<b>Intentional injury</b>									
Assault	7	19	3	3	21	29	82	2.5	1.06
Suicide	-	-	1	27	244	306	578	17.4	7.50
<b>Total intentional injury</b>	<b>7</b>	<b>19</b>	<b>4</b>	<b>30</b>	<b>265</b>	<b>335</b>	<b>660</b>	<b>19.9</b>	<b>8.57</b>
<b>Sudden unexpected death</b>									
SUDI (<1 year) <sup>†</sup>	262	-	-	-	-	-	262	7.9	3.40
SUD (1–2 years) <sup>‡</sup>	-	17	-	-	-	-	17	0.5	0.22
<b>Total Sudden unexpected death</b>	<b>262</b>	<b>17</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>279</b>	<b>8.4</b>	<b>3.62</b>
<b>Missing Data</b>	<b>11</b>	<b>6</b>	<b>-</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>31</b>	<b>0.9</b>	<b>0.40</b>
<b>Total</b>	<b>659</b>	<b>363</b>	<b>140</b>	<b>242</b>	<b>896</b>	<b>1017</b>	<b>3317</b>	<b>100.0</b>	<b>43.05</b>

\*This category represents infants 28 days and older, and less than one calendar year in age

# See table 1.3 for non-intentional injury specified further by intent

† See table 2.1 for SUDI deaths by ICD-10-AM code

‡ See table 3.1 for SUD deaths by ICD-10-AM code

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011



**Table 1.3:** Non-intentional injury by intent and age group, New Zealand 2007–2011 combined (n=1079 deaths)

Non-intentional cause of death	Non-intentional injury (includes unintentional, undetermined intent, legal intervention/war)																		
	< 1 year*			1–4 years			5–9 years			10–14 years			15–19 years			20–24 years			Total
	U	D	LW	U	D	LW	U	D	LW	U	D	LW	U	D	LW	U	D	LW	
Cut/pierce	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	-	3
Drowning	5	-	-	35	-	-	3	-	-	4	-	-	20	-	-	27	-	-	94
Fall	-	-	-	5	-	-	2	-	-	2	-	-	16	1	-	18	-	-	44
Fire/hot object or substance	-	-	-	5	-	-	6	-	-	1	-	-	3	-	-	5	-	-	20
Firearm	-	-	-	-	-	-	-	-	-	1	-	-	2	1	2	1	-	-	7
Machinery	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-	6
Transport	8	-	-	48	-	-	26	-	-	51	-	-	287	-	-	298	1	-	719
Natural/environmental	3	-	-	2	-	-	-	-	-	3	-	-	11	-	-	12	-	-	31
Overexertion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poisoning	-	-	-	1	-	-	-	-	-	7	-	-	20	3	-	27	1	-	59
Struck by, against	-	-	-	4	-	-	1	-	-	-	-	-	2	-	-	4	-	-	11
Suffocation	3	-	-	12	-	-	2	-	-	6	6	-	8	13	-	5	3	-	58
Other specified, classifiable	-	-	-	-	-	-	1	-	-	-	-	-	3	1	-	9	-	-	14
Other specified, not elsewhere classified	-	-	-	1	-	-	1	-	-	-	-	-	1	-	-	-	-	-	3
Unspecified	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	1	1	-	5
Complications of medical and surgical care	-	-	-	2	-	-	1	-	-	1	-	-	1	-	-	-	-	-	5
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total non-intentional cause of death</b>	<b>19</b>	<b>-</b>	<b>-</b>	<b>119</b>	<b>1</b>	<b>-</b>	<b>43</b>	<b>-</b>	<b>-</b>	<b>77</b>	<b>6</b>	<b>-</b>	<b>376</b>	<b>19</b>	<b>2</b>	<b>411</b>	<b>6</b>	<b>-</b>	<b>1079</b>

\*This category represents infants 28 days and older, and less than one calendar year in age

U indicates unintentional intent

D indicates undetermined intent

LW indicates legal intervention/war

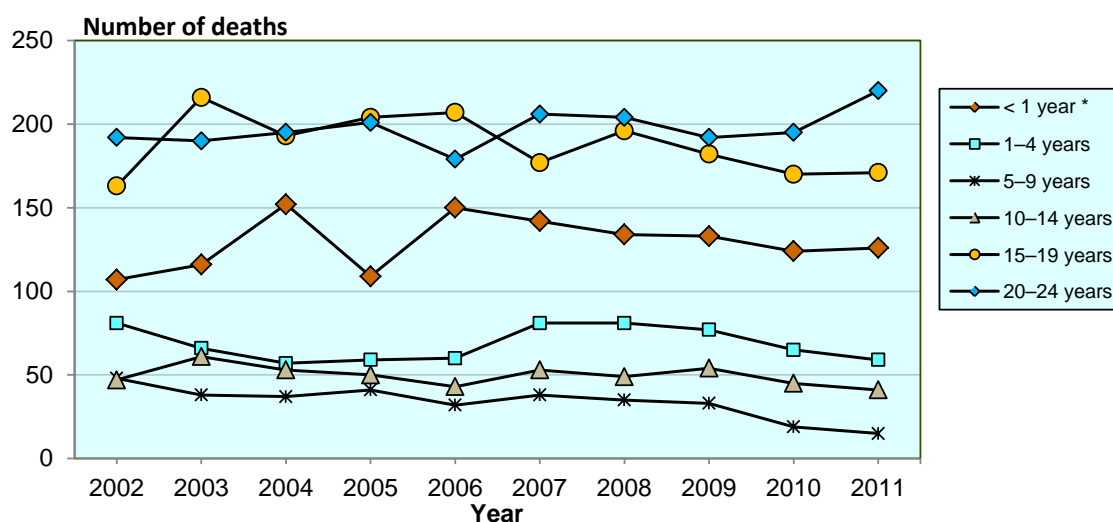
Source: Mortality Review Database

**Table 1.4:** Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, New Zealand 2007–2011 (n=3317 deaths)

Category	2007	2008	2009	2010	2011	Total	Percentage (%)
28 days – <1 year	142	134	133	124	126	659	19.9
1–4 years	81	81	77	65	59	363	10.9
5–9 years	38	35	33	19	15	140	4.2
10–14 years	53	49	54	45	41	242	7.3
15–19 years	177	196	182	170	171	896	27.0
20–24 years	206	204	192	195	220	1017	30.7
<b>Total</b>	<b>697</b>	<b>699</b>	<b>671</b>	<b>618</b>	<b>632</b>	<b>3317</b>	<b>100.0</b>

Source: Mortality Review Database

**Figure 1.2:** Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, New Zealand 2002–2011 (n=6664 deaths)



\*This category represents infants 28 days and older, and less than one calendar year in age

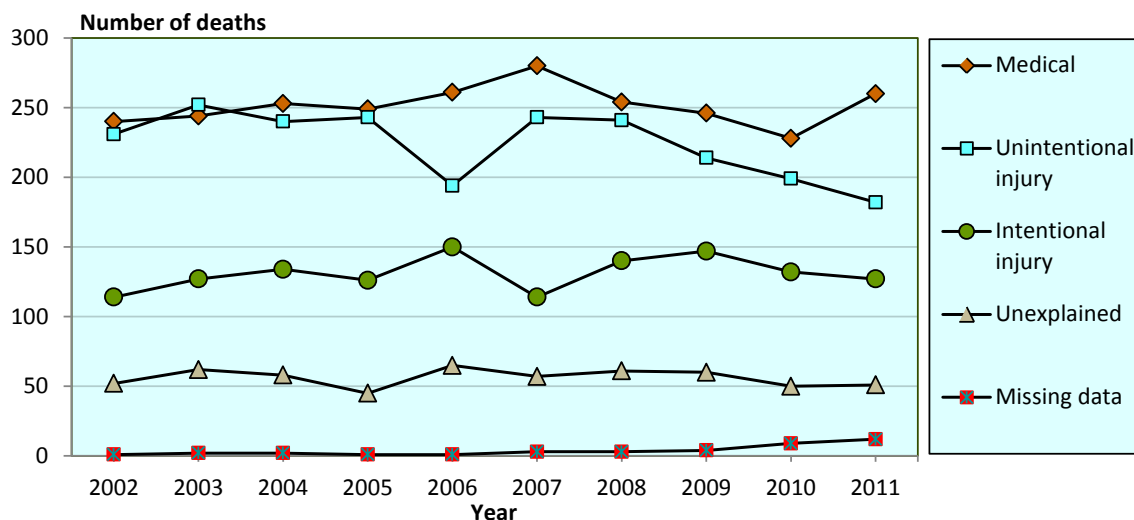
Source: Mortality Review Database

**Table 1.5:** Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and year, New Zealand 2007–2011 (n=3317 deaths)

Category	2007	2008	2009	2010	2011	Total	Percentage (%)
Medical	280	254	246	228	260	1268	38.2
Unintentional injury	243	241	214	199	182	1079	32.5
Intentional injury	114	140	147	132	127	660	19.9
Unexplained	57	61	60	50	51	279	8.4
Missing data	3	3	4	9	12	31	0.9
<b>Total</b>	<b>697</b>	<b>699</b>	<b>671</b>	<b>618</b>	<b>632</b>	<b>3317</b>	<b>100.0</b>

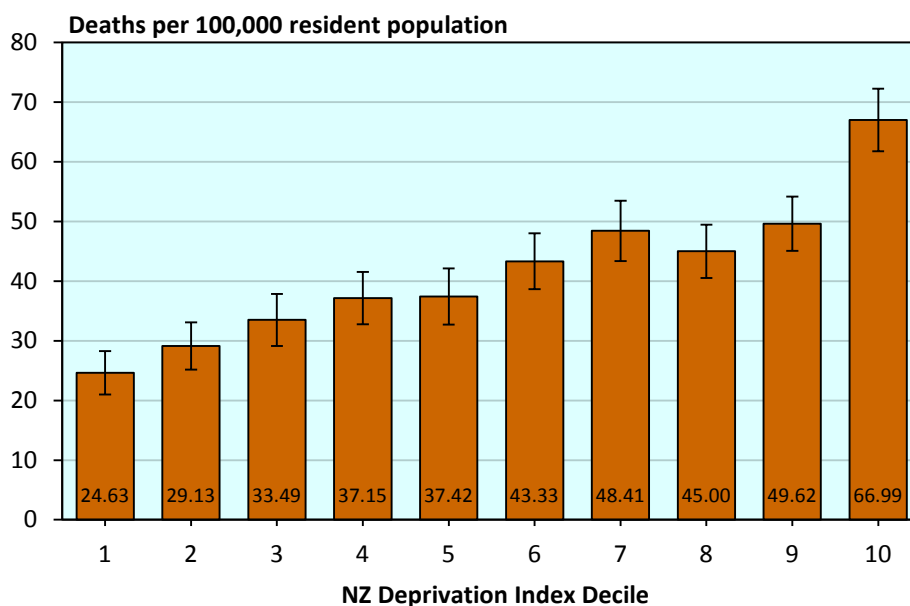
Source: Mortality Review Database

**Figure 1.3:** Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and year, New Zealand 2002–2011 (n=6664 deaths)



Source: Mortality Review Database

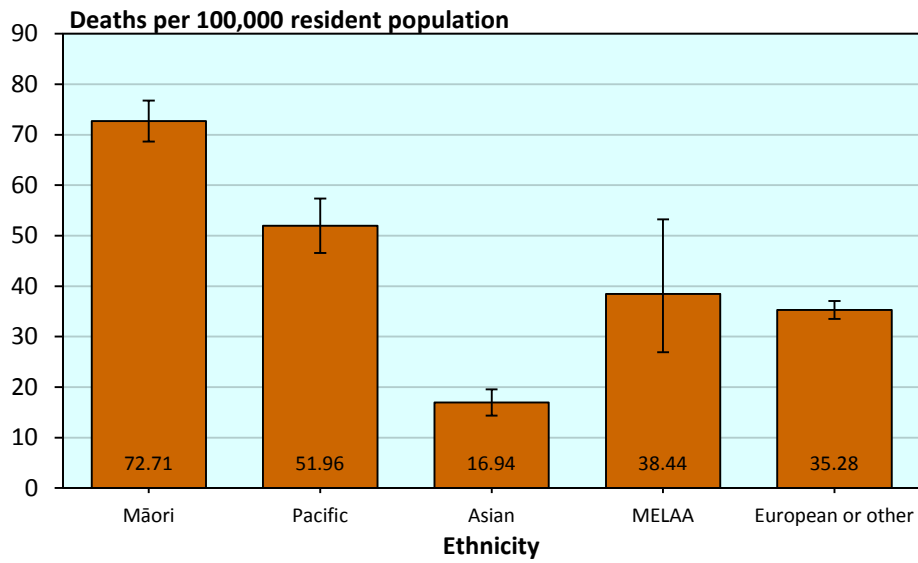
**Figure 1.4:** Mortality (rates per 100,000 and 95% confidence intervals) in children and young people aged 28 days to 24 years by NZ Deprivation Index Decile, New Zealand 2007-2011 combined (n= 3284 deaths\*)



\*Excludes 33 cases where deprivation data is missing

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

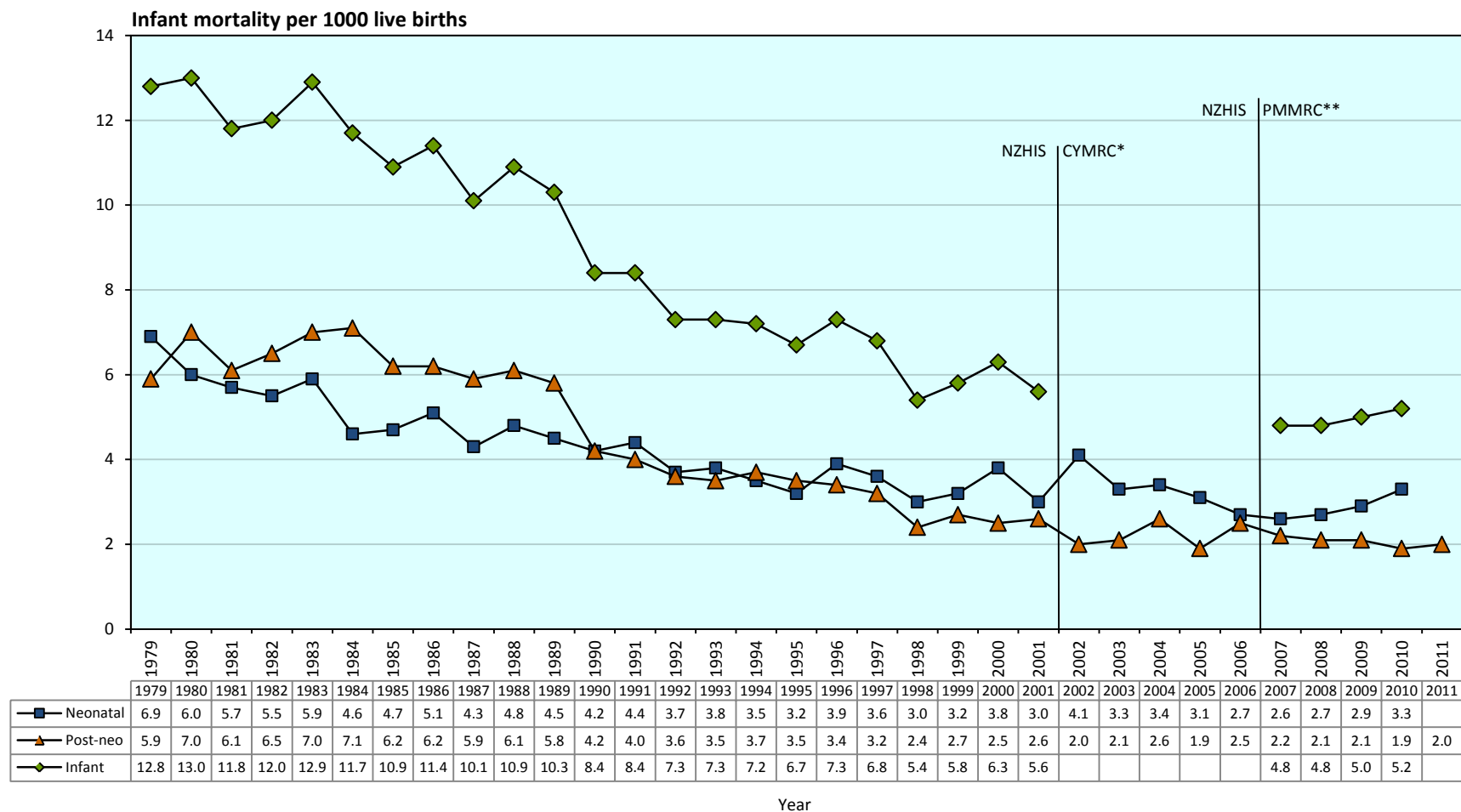
**Figure 1.5:** Mortality (rates per 100,000 and 95% confidence intervals) in children and young people aged 28 days to 24 years by ethnicity, New Zealand 2007–2011 combined (n=3292 deaths\*)



\*Excludes 25 cases where ethnicity data is missing

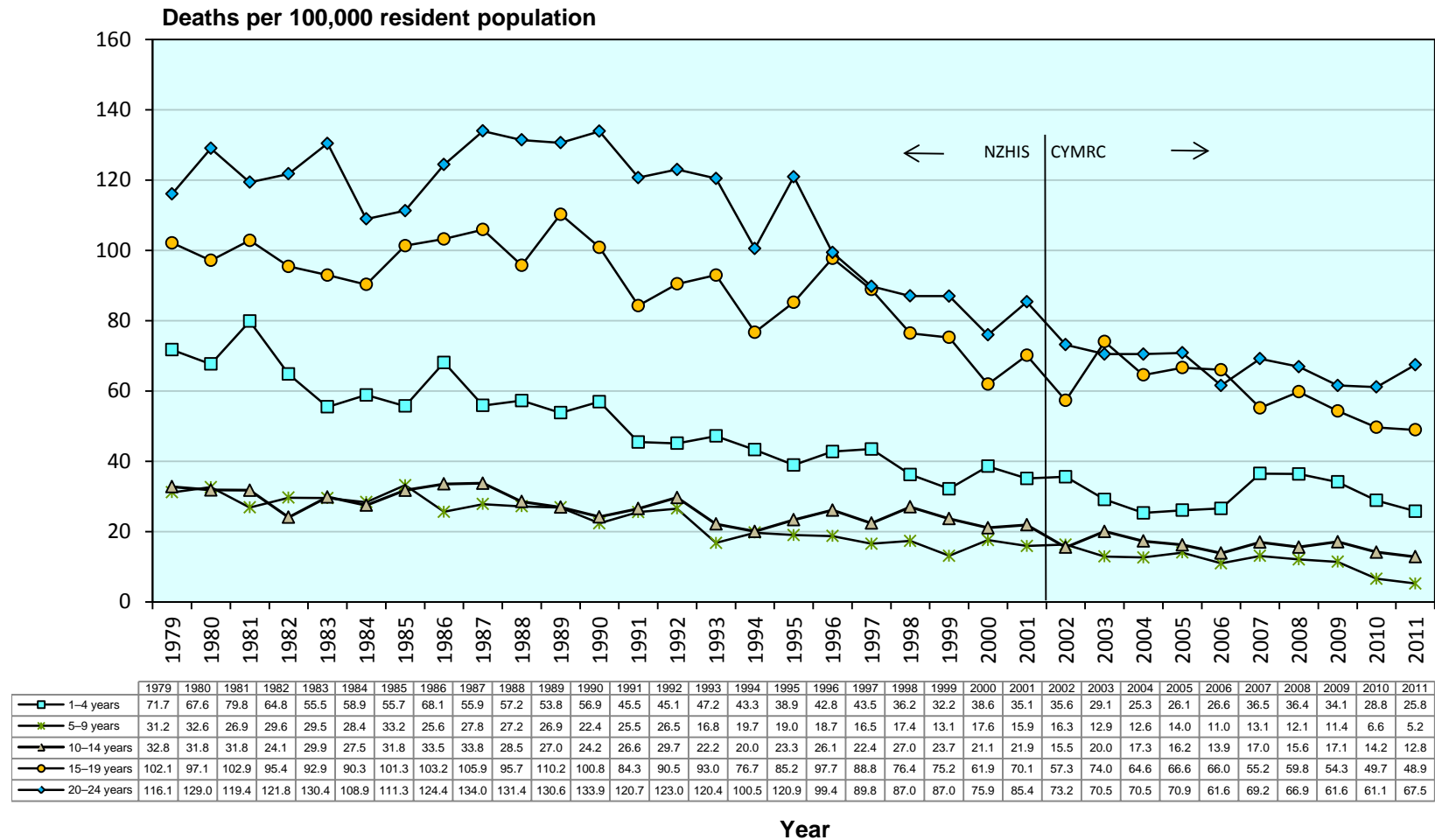
Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

**Figure 1.6: Infant, neonatal and post-neonatal mortality (rates per 1000 live births) in infants 0 days to 1 year of age, New Zealand 1979–2011**



Source: Neonatal rate: 1979-2006: NZHIS. 2007-2011: *Numerator*: Mortality Review Database; *Denominator*: NZHIS live births. Note: 2011 data for neonatal deaths not yet available.  
 Post-neonatal rate: 1979-2001: NZHIS. 2002-2011: *Numerator*: Mortality Review Database; *Denominator*: NZHIS live births  
 Infant rate: 1979-2001: NZHIS. 2007-2011: *Numerator*: Mortality Review Database; *Denominator*: NZHIS live births. Note: The combined neonatal and post-neonatal rate (infant rate) has not been displayed for the years 2002 to 2006 owing to differences in the methodology in calculating each individual rate.

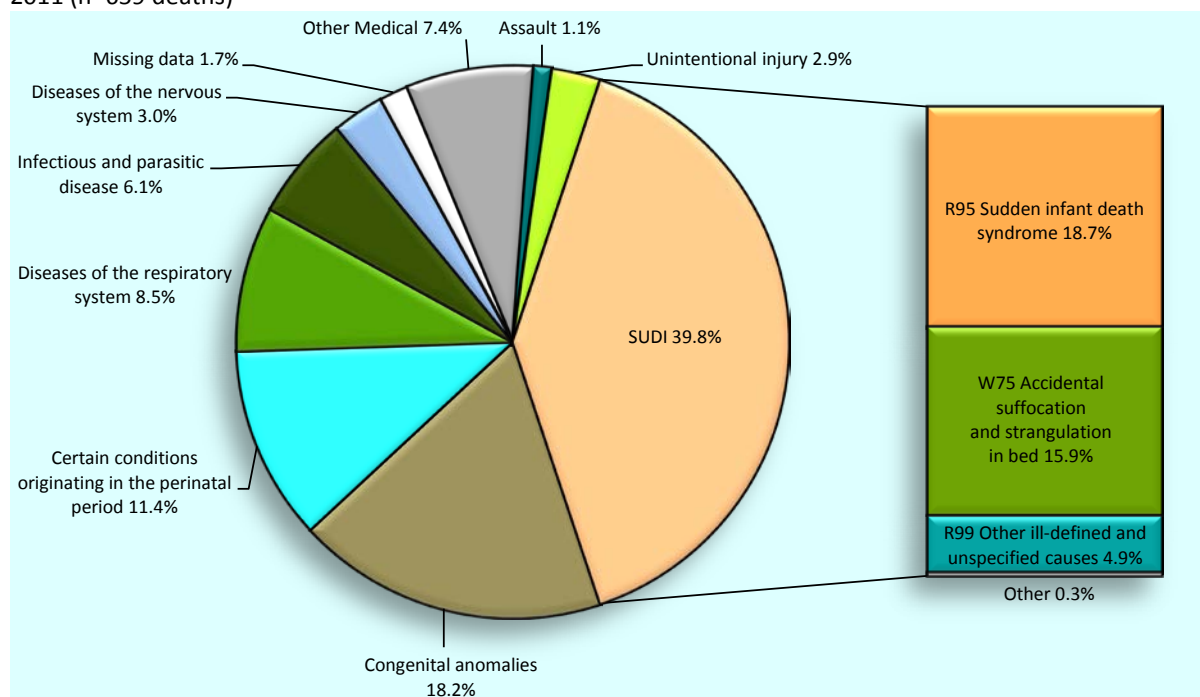
Figure 1.7: Mortality (age-specific rates per 100,000 resident population) by age group (excluding post-neonatal mortality), New Zealand 1979–2011



Source: 1979 -2001: NZHIS  
 2002-2011: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population

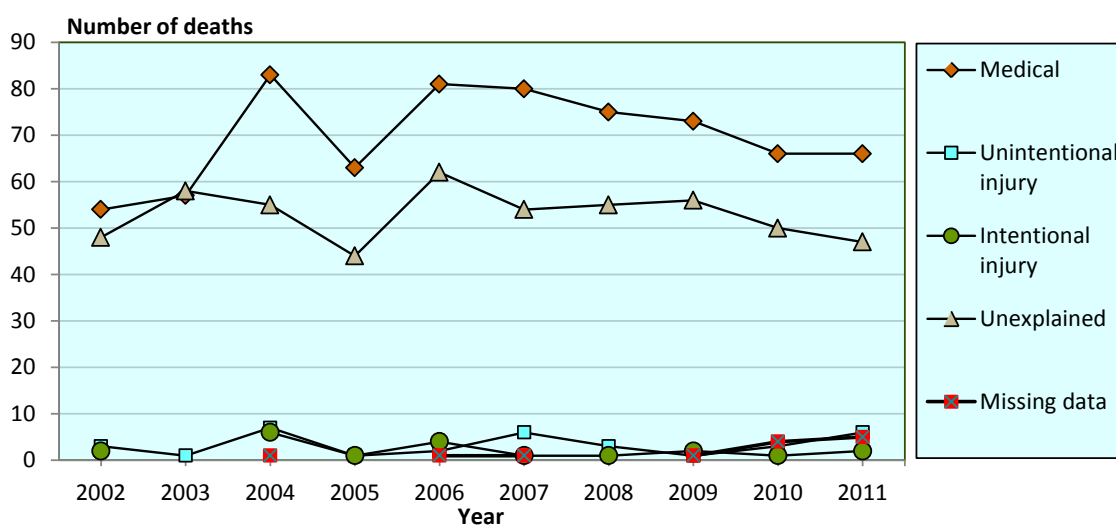
## Infants aged 28 days to less than one year

**Figure 2.1:** Mortality (%) in infants aged 28 days to less than one year by cause of death, New Zealand 2007–2011 (n=659 deaths)



Source: Mortality Review Database

**Figure 2.2:** Mortality (number of deaths) in infants aged 28 days to less than one year by cause of death and year, New Zealand 2002–2011 (n=1293 deaths)



Source: Mortality Review Database

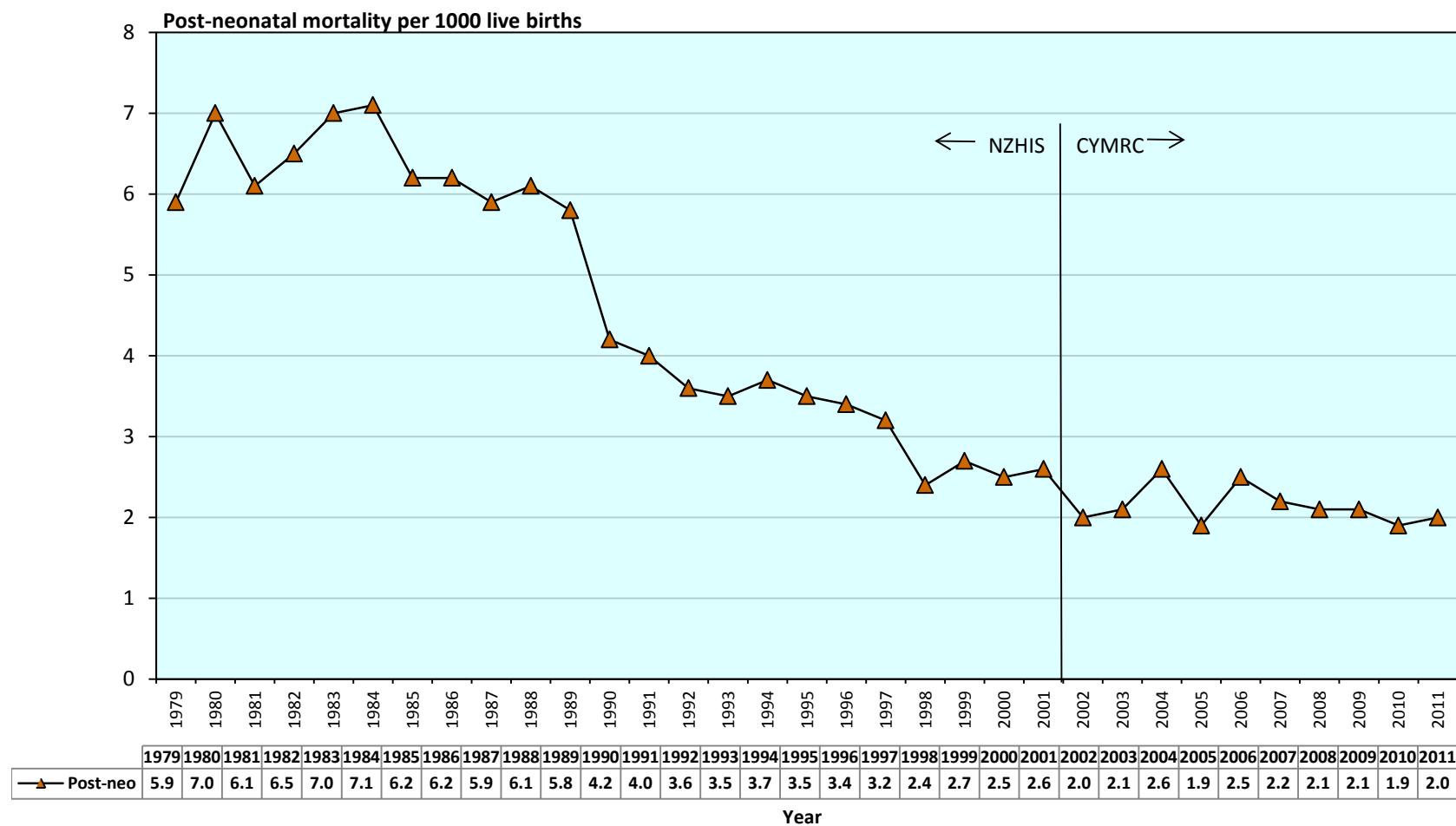
**Table 2.1:** Post-neonatal infant mortality (number of deaths and rates per 1000 live births) by cause of death and year, New Zealand 2007–2011 (n=659 deaths)

Cause of death	2007	2008	2009	2010	2011	Total	%	Rate 2007–2011
<b>Medical</b>								
Infectious and parasitic disease	7	9	11	4	9	40	6.1	0.13
Neoplasms	4	-	3	2	1	10	1.5	0.03
Diseases of the blood and blood-forming organs and disorders of immune system	1	1	2	-	-	4	0.6	0.01
Endocrine, nutritional and metabolic diseases	3	1	3	2	2	11	1.7	0.03
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	4	4	3	4	5	20	3.0	0.06
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	2	3	2	4	5	16	2.4	0.05
Diseases of the respiratory system	16	10	10	13	7	56	8.5	0.18
Diseases of the digestive system	-	2	1	-	1	4	0.6	0.01
Diseases of the skin and subcutaneous tissue	-	-	-	1	-	1	0.2	s
Diseases of the musculoskeletal system and connective tissue	1	-	-	-	-	1	0.2	s
Diseases of the genitourinary system	-	-	1	1	-	2	0.3	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	15	19	18	10	13	75	11.4	0.23
Congenital anomalies	27	26	19	25	23	120	18.2	0.38
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>80</b>	<b>75</b>	<b>73</b>	<b>66</b>	<b>66</b>	<b>360</b>	<b>54.6</b>	<b>1.13</b>
<b>Unintentional injury (undetermined intent, legal intervention war)</b>								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	3	-	-	1	1	5	0.8	0.02
Fall	-	-	-	-	-	-	-	-
Fire/hot object or substance	-	-	-	-	-	-	-	-
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Transport	2	3	-	2	1	8	1.2	0.03
Natural/environmental	-	-	-	-	3	3	0.5	0.01
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	-	-	-	-	-	-	-
Struck by, against	-	-	-	-	-	-	-	-
Suffocation	1	-	1	-	1	3	0.5	0.01
Other specified, classifiable	-	-	-	-	-	-	-	-
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>19</b>	<b>2.9</b>	<b>0.06</b>
<b>Intentional injury</b>								
Assault	1	1	2	1	2	7	1.1	0.02
Suicide	-	-	-	-	-	-	-	-
<b>Total intentional injury</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>1.1</b>	<b>0.02</b>
<b>Sudden Unexpected Death in Infancy</b>								
R95 Sudden infant death syndrome	36	33	35	11	8	123	18.7	0.38
R96 Other sudden death, cause unknown	-	-	-	-	-	-	-	-
R98 Unattended death	-	-	-	-	-	-	-	-
R99 Other ill-defined and unspecified causes of mortality	-	-	1	12	19	32	4.9	0.10
W75 Accidental suffocation and strangulation in bed	18	22	19	26	20	105	15.9	0.33
W78 Inhalation of gastric contents	-	-	-	1	-	1	0.2	s
W79 Inhalation and ingestion of food causing obstruction of respiratory tract	-	-	1	-	-	1	0.2	s
<b>Total SUDI</b>	<b>54</b>	<b>55</b>	<b>56</b>	<b>50</b>	<b>47</b>	<b>262</b>	<b>39.8</b>	<b>0.82</b>
<b>Missing Data</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>4</b>	<b>5</b>	<b>11</b>	<b>1.7</b>	<b>0.03</b>
<b>Total</b>	<b>142</b>	<b>134</b>	<b>133</b>	<b>124</b>	<b>126</b>	<b>659</b>	<b>100.0</b>	<b>2.06</b>

Source: Numerator: Mortality Review Database; Denominator: NZHIS Live Births 2007–2011  
's' indicates rate not calculated due to small numbers



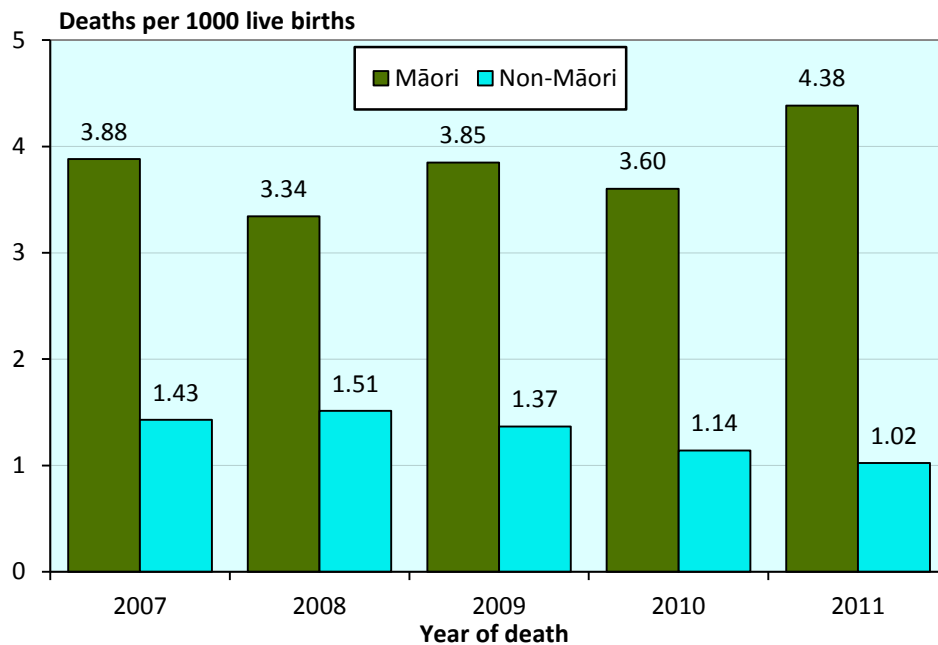
**Figure 2.3:** Post-neonatal mortality (rates per 1000 live births) in infants aged 28 days to 1 year, New Zealand 1979–2011



Source: 1979-2001: NZHIS

2002-2011: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population

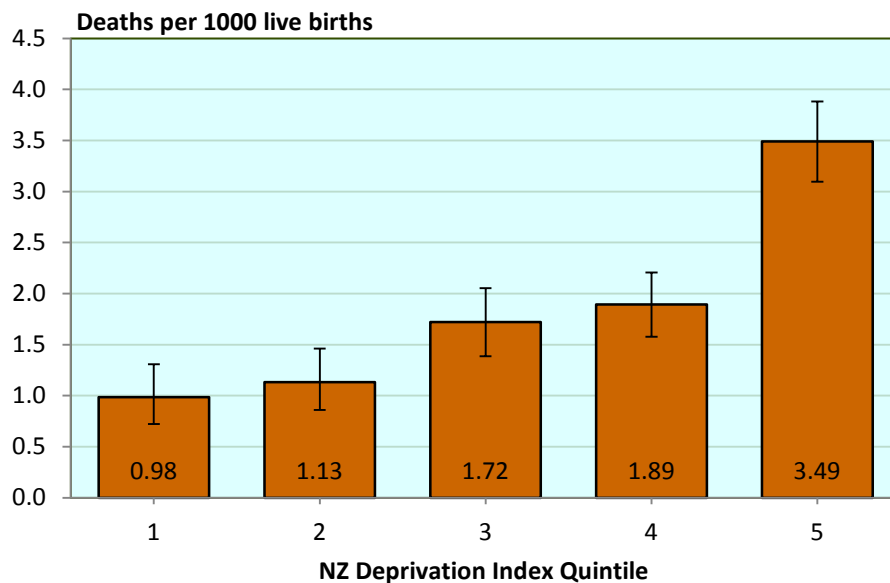
**Figure 2.4:** Post-neonatal infant mortality (rates per 1000 live births), Māori and non-Māori, New Zealand 2007–2011 (n=650 deaths\*)



\*Excludes nine cases where ethnicity data is missing

Source: *Numerator* Mortality Review Database; *Denominator* NZHIS Live Births 2007-2011

**Figure 2.5:** Mortality (rates per 1000 live births with 95% confidence intervals) in infants aged 28 days to less than 1 year by NZ Deprivation Index Quintile, New Zealand 2007-2011 combined (n=649 deaths)

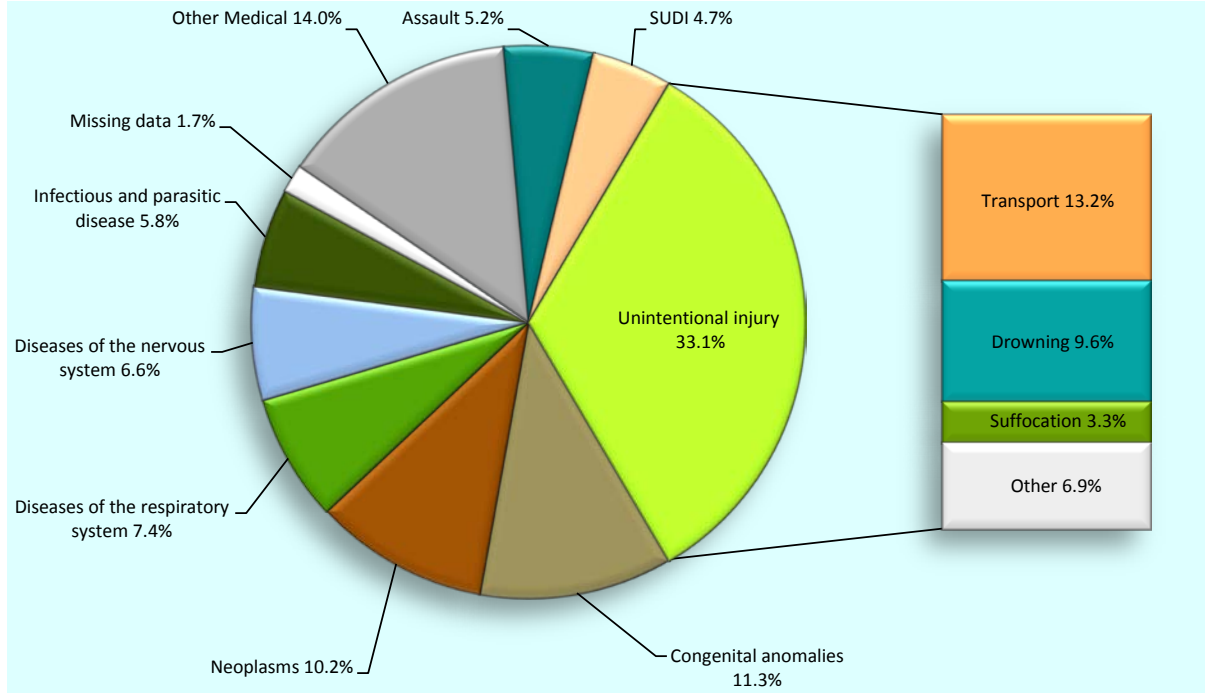


\*Excludes 10 cases where deprivation data is missing

Source: *Numerator* Mortality Review Database; *Denominator* NZHIS Live Births 2007-2011

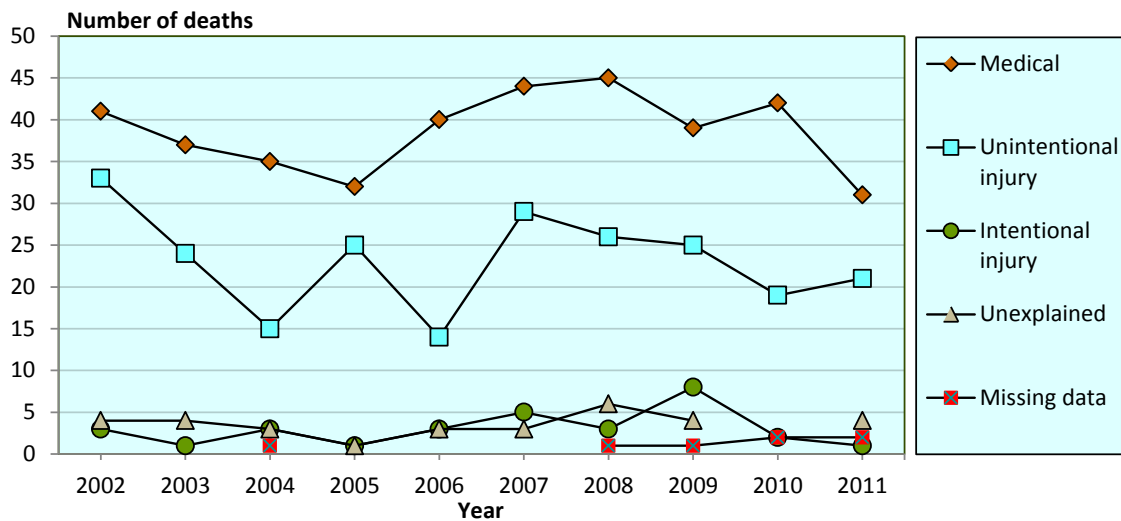
# Children aged one to four years

**Figure 3.1:** Mortality (%) in children aged 1–4 years by cause of death, New Zealand 2007–2011 (n=363 deaths)



Source: Mortality Review Database

**Figure 3.2:** Mortality (number of deaths) in children aged 1–4 years by cause of death and year, New Zealand 2002–2011 (n=686 deaths)



Source: Mortality Review Database

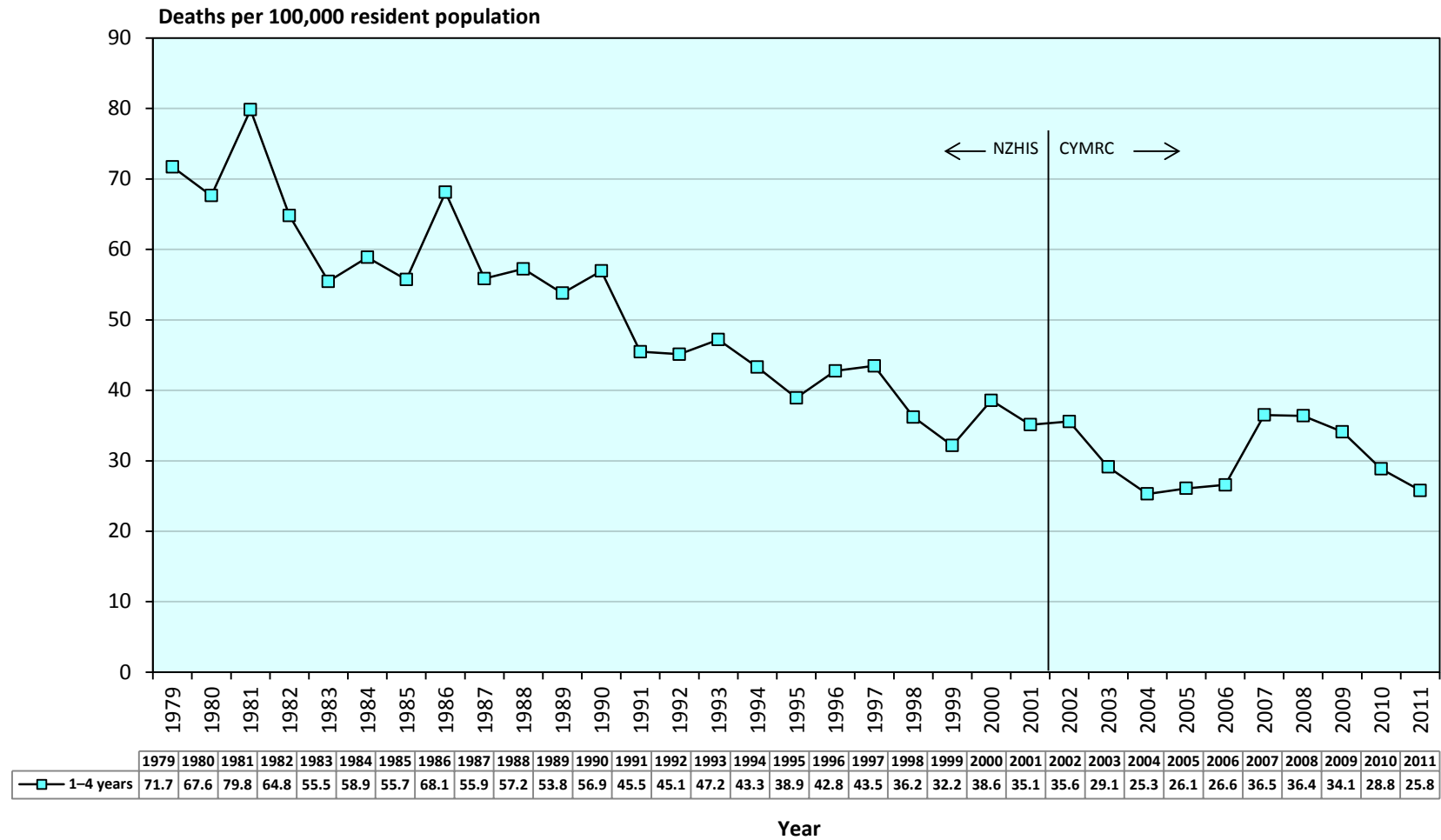
**Table 3.1:** Mortality (number of deaths and rates per 100,000 resident population) in children aged 1–4 years by cause of death and year, New Zealand 2007–2011 (n=363 deaths)

	2007	2008	2009	2010	2011	Total	%	Rate 2007–2011
<b>Medical</b>								
Infectious and parasitic disease	3	6	1	5	6	21	5.8	1.87
Neoplasms	9	8	5	8	7	37	10.2	3.29
Diseases of the blood and blood-forming organs and disorders of immune system	2	1	-	1	-	4	1.1	0.36
Endocrine, nutritional and metabolic diseases	3	6	3	1	1	14	3.9	1.25
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	4	5	7	6	2	24	6.6	2.13
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	3	4	3	4	2	16	4.4	1.42
Diseases of the respiratory system	7	6	5	6	3	27	7.4	2.40
Diseases of the digestive system	2	1	-	1	-	4	1.1	0.36
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	2	-	-	-	-	2	0.6	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	2	4	6	1.7	0.53
Congenital anomalies	9	8	13	6	5	41	11.3	3.65
Symptoms & abnormal findings not elsewhere classified	-	-	2	2	1	5	1.4	0.44
<b>Total medical</b>	<b>44</b>	<b>45</b>	<b>39</b>	<b>42</b>	<b>31</b>	<b>201</b>	<b>55.4</b>	<b>17.88</b>
<b>Unintentional injury (undetermined intent, legal intervention war)</b>								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	7	7	6	4	11	35	9.6	3.11
Fall	2	1	1	-	1	5	1.4	0.44
Fire/hot object or substance	1	2	2	-	-	5	1.4	0.44
Firearm	-	-	-	-	-	-	-	-
Machinery	1	1	-	1	-	3	0.8	0.27
Transport	10	9	13	11	5	48	13.2	4.27
Natural/environmental	-	-	-	1	1	2	0.6	s
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	-	1	-	-	1	0.3	s
Struck by, against	2	1	-	1	-	4	1.1	0.36
Suffocation	4	5	1	-	2	12	3.3	1.07
Other specified, classifiable	-	-	-	-	-	-	-	-
Other specified, not elsewhere classified	-	-	-	1	-	1	0.3	s
Unspecified	1	-	1	-	-	2	0.6	s
Complications of medical and surgical care	1	-	-	-	1	2	0.6	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>29</b>	<b>26</b>	<b>25</b>	<b>19</b>	<b>21</b>	<b>120</b>	<b>33.1</b>	<b>10.67</b>
<b>Intentional injury</b>								
Assault	5	3	8	2	1	19	5.2	1.69
Suicide	-	-	-	-	-	-	-	-
<b>Total intentional injury</b>	<b>5</b>	<b>3</b>	<b>8</b>	<b>2</b>	<b>1</b>	<b>19</b>	<b>5.2</b>	<b>1.69</b>
<b>Sudden Unexpected Death</b>								
R95 Sudden infant death syndrome	-	-	-	-	-	-	-	-
R96 Other sudden death, cause unknown	-	-	-	-	1	1	0.3	s
R98 Unattended death	-	-	-	-	-	-	-	-
R99 Other ill-defined and unspecified causes of mortality	2	1	4	-	3	10	2.8	0.89
W75 Accidental suffocation and strangulation in bed	1	5	-	-	-	6	1.7	0.53
W78 Inhalation of gastric contents	-	-	-	-	-	-	-	-
<b>Total SUD</b>	<b>3</b>	<b>6</b>	<b>4</b>	<b>-</b>	<b>4</b>	<b>17</b>	<b>4.7</b>	<b>1.51</b>
<b>Missing Data</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>1.7</b>	<b>0.53</b>
<b>Total</b>	<b>81</b>	<b>81</b>	<b>77</b>	<b>65</b>	<b>59</b>	<b>363</b>	<b>100.0</b>	<b>32.29</b>

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

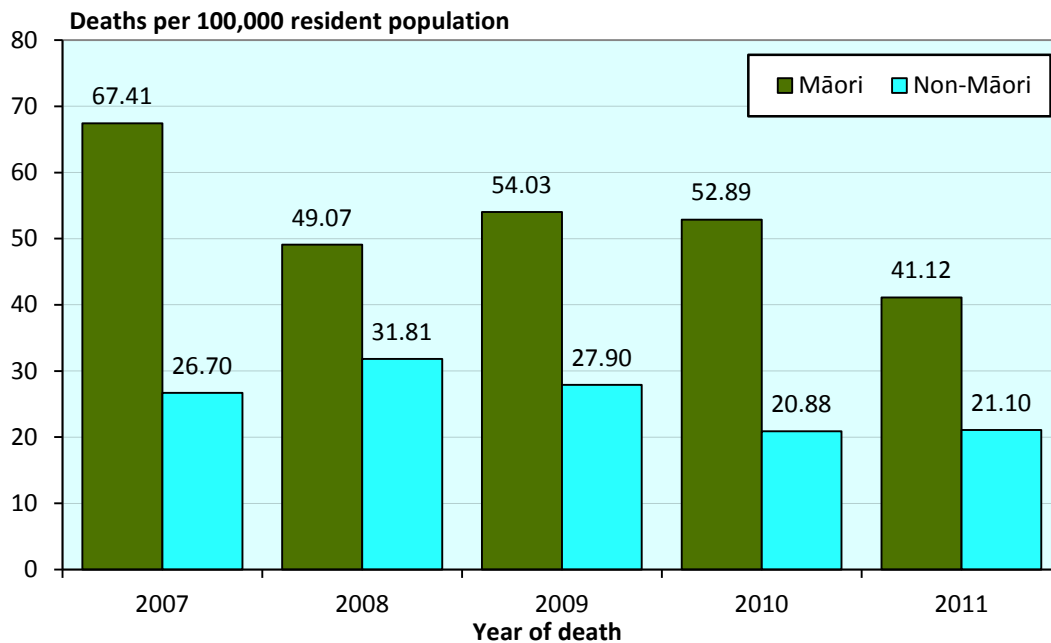
**Figure 3.3:** Mortality (rates per 100,000 resident population) in children aged 1–4 years, New Zealand 1979–2011



Source: 1979 -2001: NZHIS

2002-2011: *Numerator:* Mortality Review Database; *Denominator:* NZ MRDG Estimated Resident Population 2002–2011

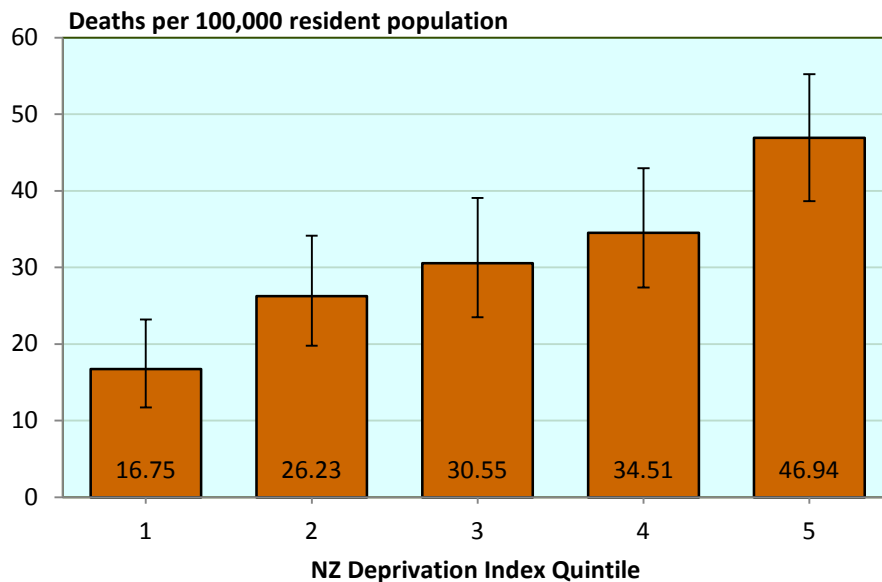
**Figure 3.4:** Mortality (rates per 100,000 resident population) in children aged 1–4 years for Māori and non-Māori, New Zealand 2007–2011 (n=361 deaths\*)



\*Excludes two cases where ethnicity data is missing

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2007–2011

**Figure 3.5:** Mortality (rates per 100,000 resident population with 95% confidence intervals) in children aged 1–4 years by NZ Deprivation Index Quintile, New Zealand 2007-2011 combined (n=357 deaths\*)

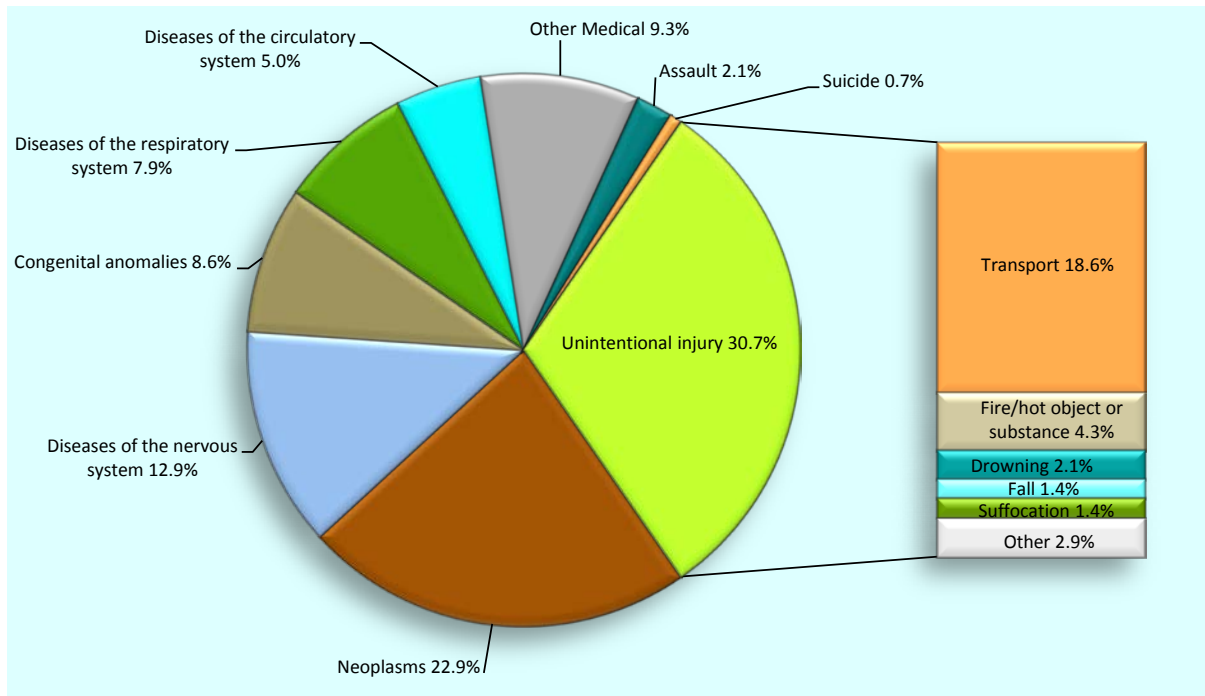


\*Excludes six cases where deprivation data is missing

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2007–2011

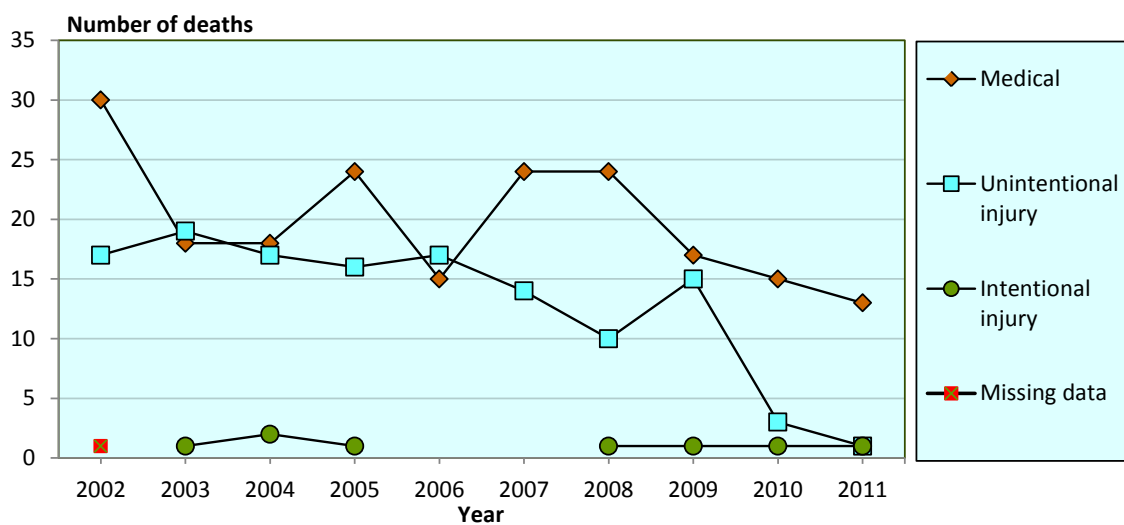
## Children aged five to nine years

**Figure 4.1:** Mortality (%) in children aged 5–9 years by cause of death, New Zealand 2007–2011 (n=140 deaths)



Source: Mortality Review Database

**Figure 4.2:** Mortality (number of deaths) in children aged 5–9 years by cause of death and year, New Zealand 2002–2011 (n=336 deaths)



Source: Mortality Review Database

**Table 4.1:** Mortality (number of deaths and rates per 100,000 resident population) in children aged 5–9 years by cause of death and year, New Zealand 2007–2011 (n=140 deaths)

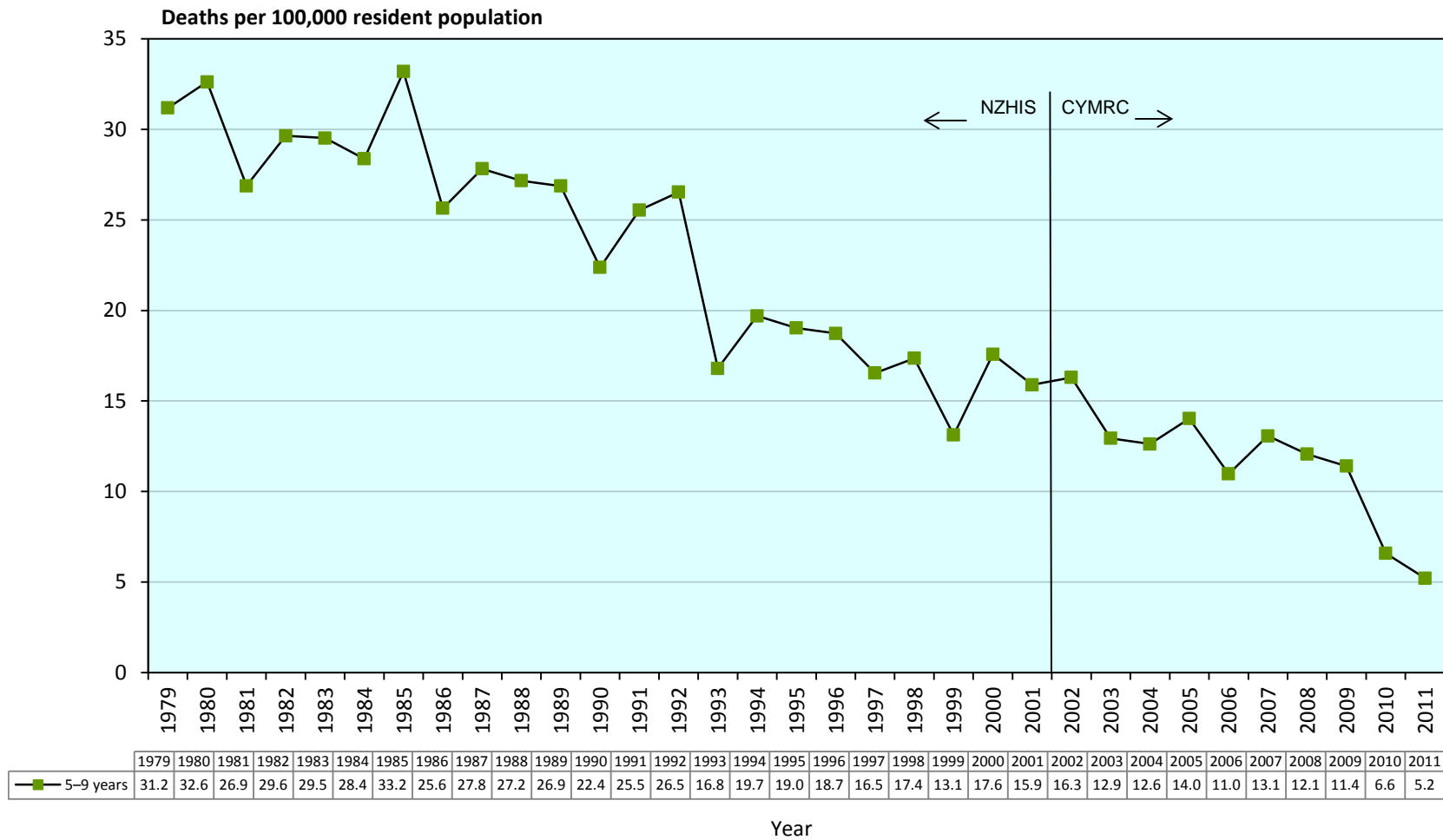
	2007	2008	2009	2010	2011	Total	%	Rate 2007–2011
<b>Medical</b>								
Infectious and parasitic disease	2	1	-	-	1	4	2.9	0.28
Neoplasms	6	10	6	7	3	32	22.9	2.21
Diseases of the blood and blood-forming organs and disorders of immune system	1	-	-	-	-	1	0.7	s
Endocrine, nutritional and metabolic diseases	-	-	1	1	2	4	2.9	0.28
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	6	3	5	1	3	18	12.9	1.24
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	1	4	-	1	1	7	5.0	0.48
Diseases of the respiratory system	3	2	3	1	2	11	7.9	0.76
Diseases of the digestive system	-	1	-	-	-	1	0.7	s
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	1	-	1	-	-	2	1.4	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	1	-	-	-	-	1	0.7	s
Congenital anomalies	3	3	1	4	1	12	8.6	0.83
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>24</b>	<b>24</b>	<b>17</b>	<b>15</b>	<b>13</b>	<b>93</b>	<b>66.4</b>	<b>6.43</b>
<b>Unintentional injury (undetermined intent, legal intervention war)</b>								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	-	2	1	-	-	3	2.1	0.21
Fall	1	-	1	-	-	2	1.4	0.14
Fire/hot object or substance	2	1	2	1	-	6	4.3	0.41
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Transport	10	4	9	2	1	26	18.6	1.80
Natural/environmental	-	-	-	-	-	-	-	-
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	-	-	-	-	-	-	-
Struck by, against	-	-	1	-	-	1	0.7	s
Suffocation	-	2	-	-	-	2	1.4	s
Other specified, classifiable	-	1	-	-	-	1	0.7	s
Other specified, not elsewhere classified	1	-	-	-	-	1	0.7	s
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	-	1	-	-	1	0.7	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>14</b>	<b>10</b>	<b>15</b>	<b>3</b>	<b>1</b>	<b>43</b>	<b>30.7</b>	<b>2.97</b>
<b>Intentional injury</b>								
Assault	-	1	1	1	-	3	2.1	0.21
Suicide	-	-	-	-	1	1	0.7	s
<b>Total intentional injury</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2.9</b>	<b>0.28</b>
<b>Missing Data</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total</b>	<b>38</b>	<b>35</b>	<b>33</b>	<b>19</b>	<b>15</b>	<b>140</b>	<b>100.0</b>	<b>9.68</b>

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011



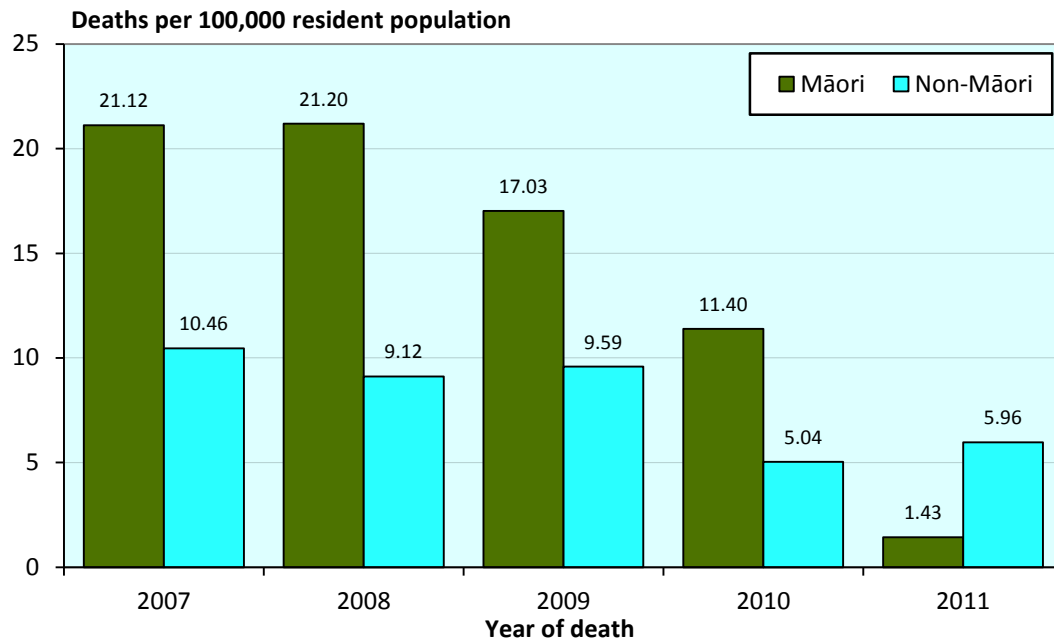
**Figure 4.3:** Mortality (rates per 100,000 resident population) in children aged 5–9 years, New Zealand 1979–2011



Source: 1979 -2001: NZHIS

2002-2011: *Numerator:* Mortality Review Database; *Denominator:* NZ MRDG Estimated Resident Population

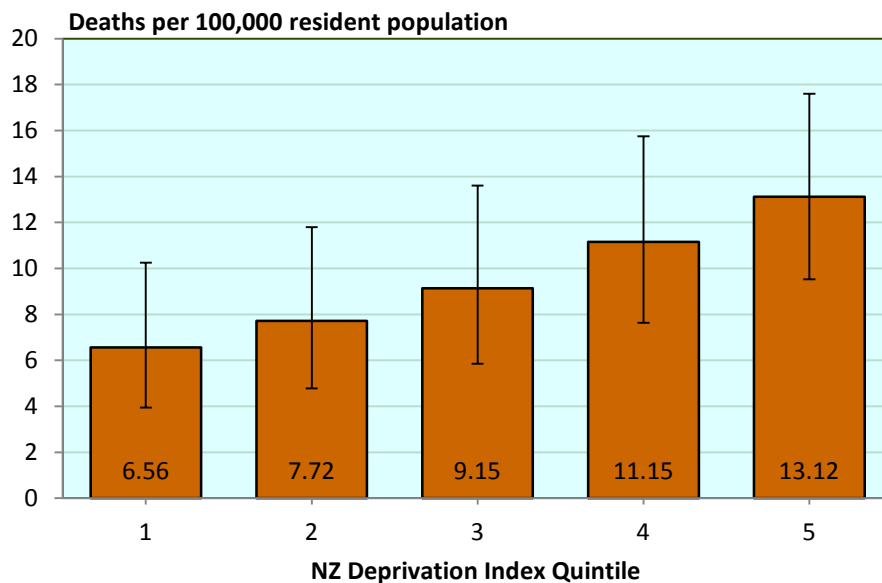
**Figure 4.4:** Mortality (rates per 100,000 resident population) in children aged 5-9 years, Māori and non-Māori, New Zealand 2007–2011 (n=139 deaths\*)



\*Excludes one case with missing ethnicity data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

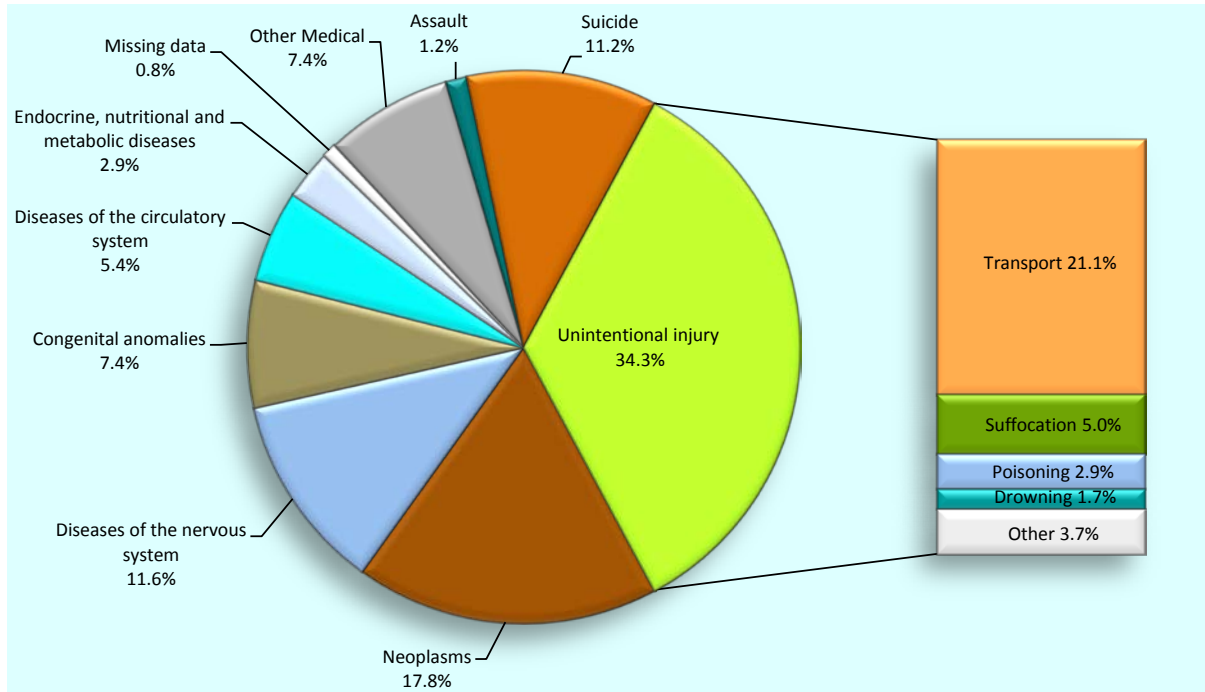
**Figure 4.5:** Mortality (rates per 100,000 resident population with 95% confidence intervals) in children aged 5–9 years by NZ Deprivation Index Quintile, New Zealand 2007-2011 combined (n=140 deaths)



Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

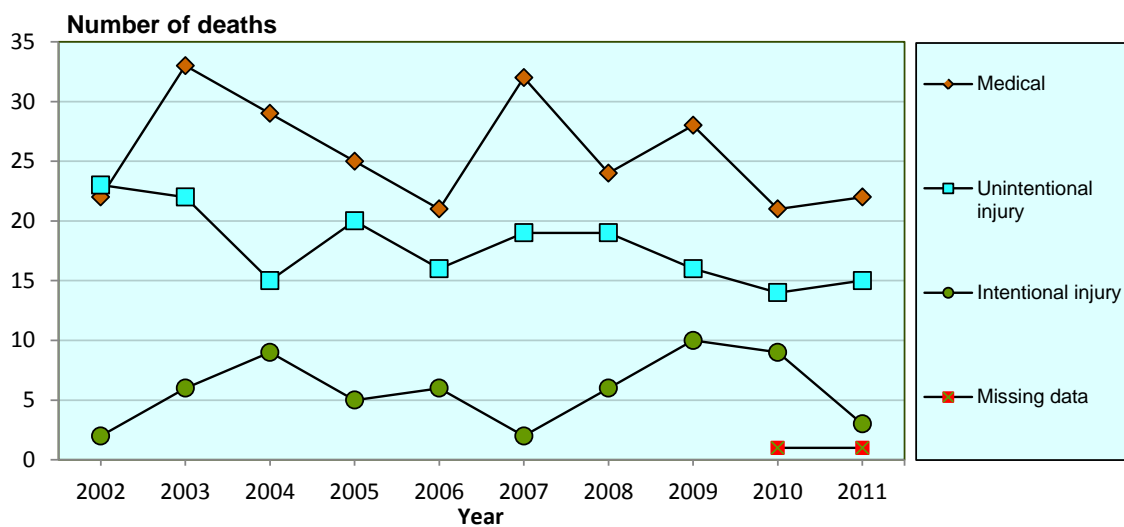
## Children aged 10–14 years

**Figure 5.1:** Mortality (%) in children aged 10–14 years by cause of death, New Zealand 2007–2011 (n=242 deaths)



Source: Mortality Review Database

**Figure 5.2** Mortality (number of deaths) in children aged 10–14 years by cause of death and year, New Zealand 2002–2011 (n=496 deaths)



Source: Mortality Review Database

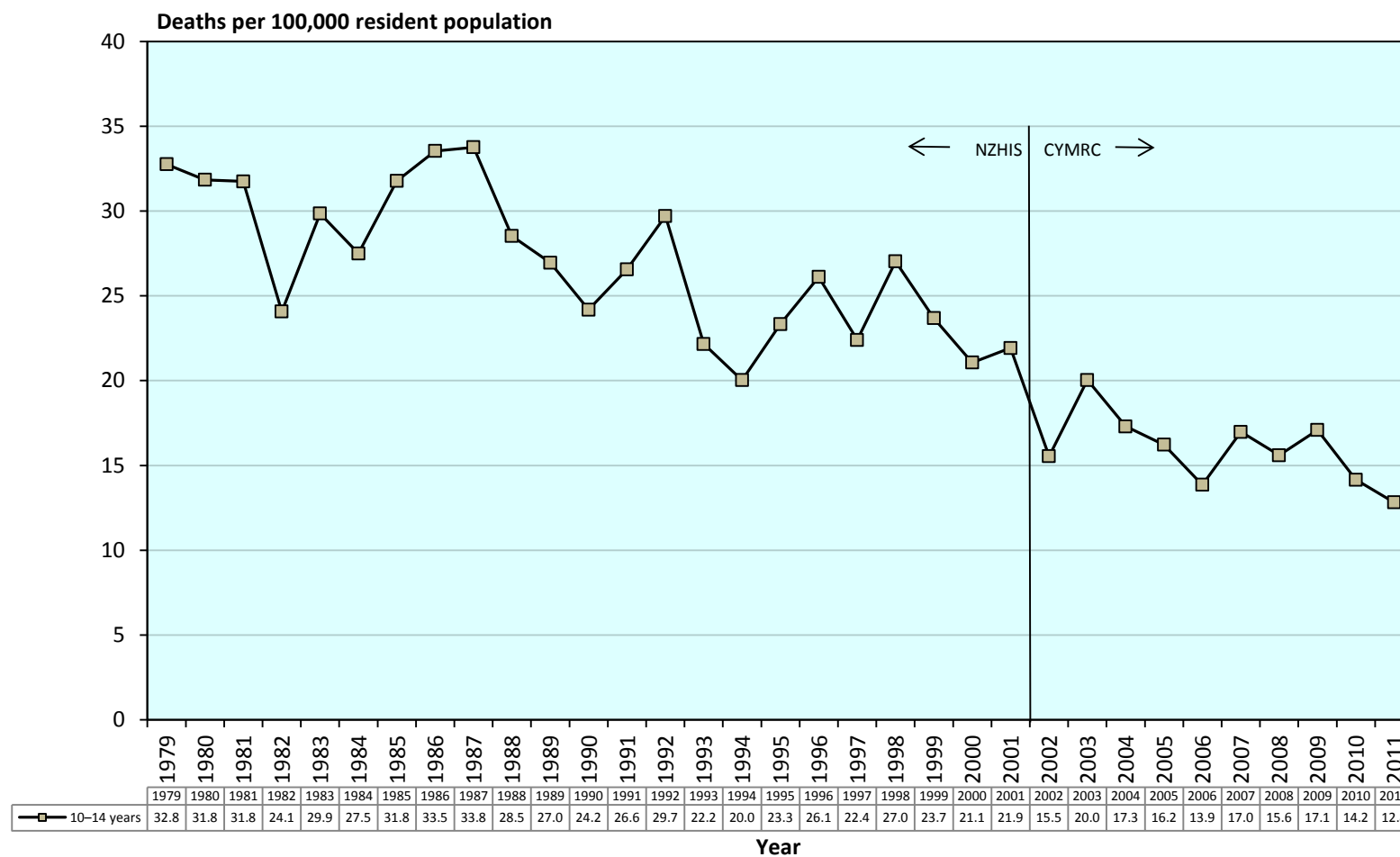
**Table 5.1:** Mortality (number of deaths and rates per 100,000 resident population) in children aged 10–14 years by cause of death and year, New Zealand 2007–2011 (n=242 deaths)

	2007	2008	2009	2010	2011	Total	%	Rate 2007–2011
<b>Medical</b>								
Infectious and parasitic disease	1	-	1	-	1	3	1.2	0.19
Neoplasms	12	13	6	7	5	43	17.8	2.72
Diseases of the blood and blood-forming organs and disorders of immune system	1	-	-	-	-	1	0.4	s
Endocrine, nutritional and metabolic diseases	3	-	-	2	2	7	2.9	0.44
Mental and behavioural disorders	-	-	1	-	-	1	0.4	s
Diseases of the nervous system	6	3	8	3	8	28	11.6	1.77
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	2	3	3	3	2	13	5.4	0.82
Diseases of the respiratory system	1	1	2	2	-	6	2.5	0.38
Diseases of the digestive system	1	-	1	-	-	2	0.8	s
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	-	-	1	-	-	1	0.4	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	1	1	0.4	s
Congenital anomalies	5	3	5	3	2	18	7.4	1.14
Symptoms & abnormal findings not elsewhere classified	-	1	-	1	1	3	1.2	0.19
<b>Total medical</b>	<b>32</b>	<b>24</b>	<b>28</b>	<b>21</b>	<b>22</b>	<b>127</b>	<b>52.5</b>	<b>8.04</b>
<b>Unintentional injury (undetermined intent, legal intervention war)</b>								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	-	-	2	1	1	4	1.7	0.25
Fall	-	1	-	1	-	2	0.8	s
Fire/hot object or substance	-	-	1	-	-	1	0.4	s
Firearm	-	-	1	-	-	1	0.4	s
Machinery	-	-	-	-	-	-	-	-
Transport	14	13	7	10	7	51	21.1	3.23
Natural/environmental	-	1	-	1	1	3	1.2	0.19
Overexertion	-	-	-	-	-	-	-	-
Poisoning	2	2	2	1	-	7	2.9	0.44
Struck by, against	-	-	-	-	-	-	-	-
Suffocation	3	1	3	-	5	12	5.0	0.76
Other specified, classifiable	-	-	-	-	-	-	-	-
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	-	1	1	0.4	s
Complications of medical and surgical care	-	1	-	-	-	1	0.4	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>19</b>	<b>19</b>	<b>16</b>	<b>14</b>	<b>15</b>	<b>83</b>	<b>34.3</b>	<b>5.25</b>
<b>Intentional injury</b>								
Assault	-	1	-	1	1	3	1.2	0.19
Suicide	2	5	10	8	2	27	11.2	1.71
<b>Total intentional injury</b>	<b>2</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>3</b>	<b>30</b>	<b>12.4</b>	<b>1.90</b>
<b>Missing Data</b>	-	-	-	1	1	2	0.8	s
<b>Total</b>	<b>53</b>	<b>49</b>	<b>54</b>	<b>45</b>	<b>41</b>	<b>242</b>	<b>100.0</b>	<b>15.32</b>

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

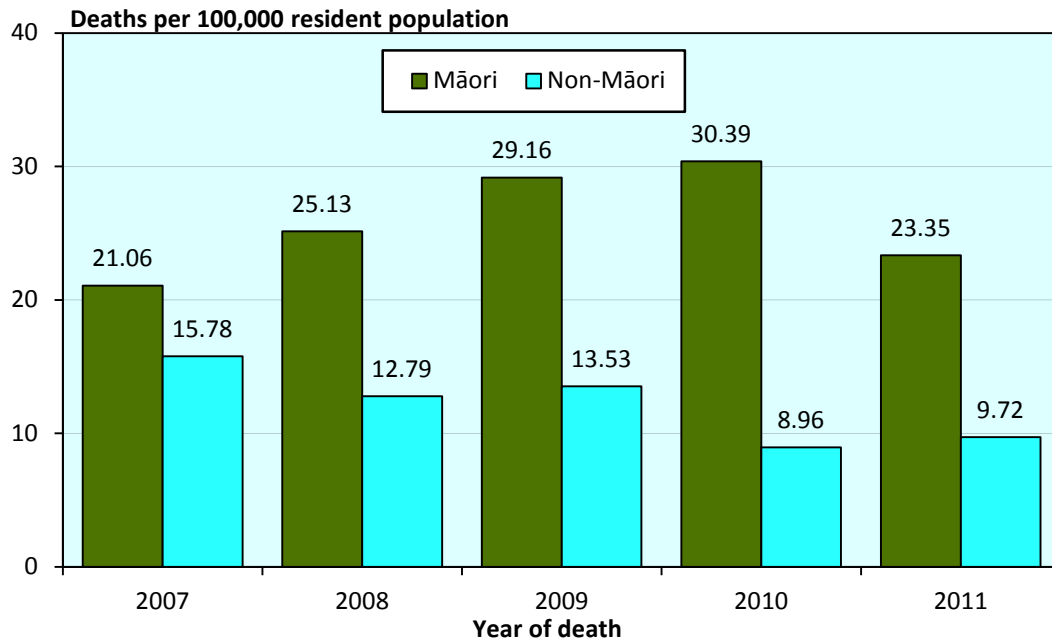
**Figure 5.3:** Mortality (rates per 100,000 resident population) in children aged 10–14 years, New Zealand 1979–2011



Source: 1979-2001: NZHIS

2002-2011: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population

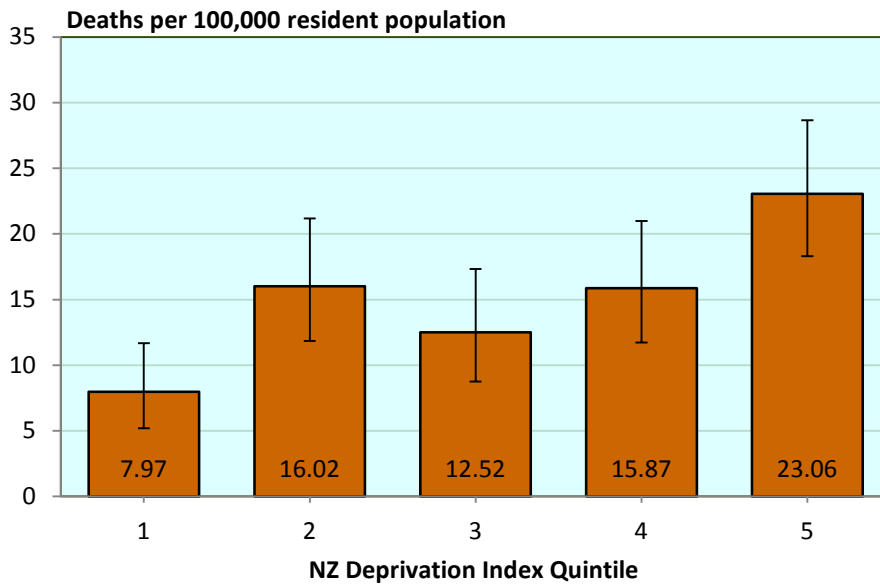
**Figure 5.4:** Mortality (rates per 100,000 resident population) in children aged 10–14 years for Māori and non-Māori, New Zealand 2007–2011 (n=241\* deaths)



\*Excludes one case with no available ethnicity data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

**Figure 5.5:** Mortality (rates per 100,000 resident population with 95% confidence intervals) in children aged 10–14 years by NZ Deprivation Index Quintile, New Zealand 2007-2011 combined (n=241 deaths\*)

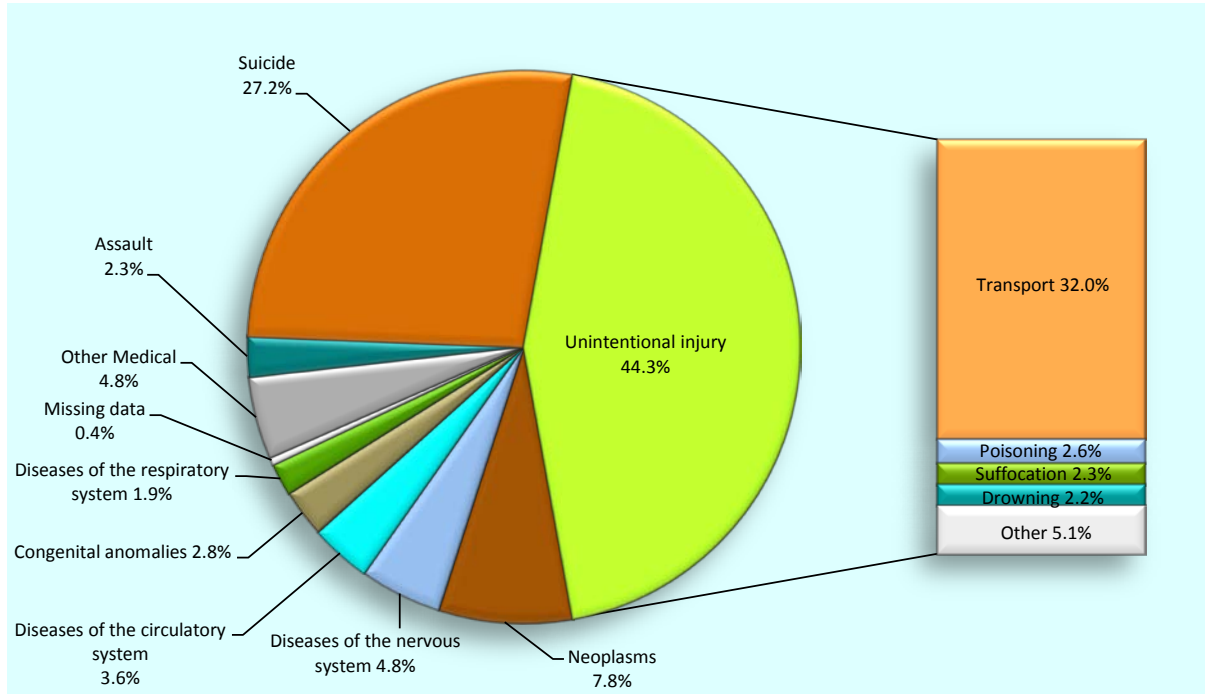


\*Excludes one case with no available deprivation data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

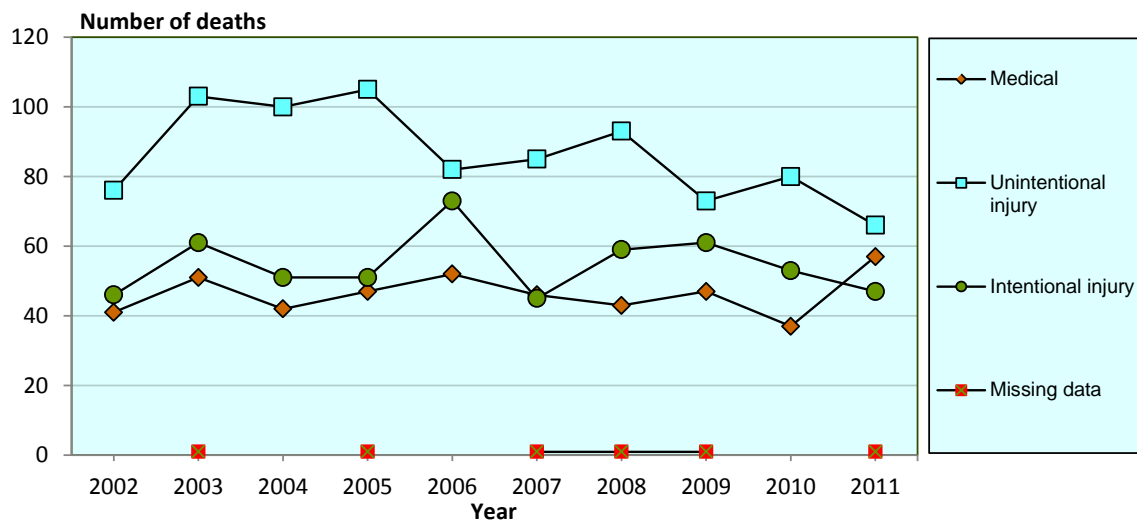
# Young people aged 15–19 years

**Figure 6.1:** Mortality (%) in young people aged 15–19 years by cause of death, New Zealand 2007–2011 (n=896 deaths)



Source: Mortality Review Database

**Figure 6.2:** Mortality (number of deaths) in young people aged 15–19 years by cause of death and year, New Zealand 2002–2011 (n=1879 deaths)



Source: Mortality Review Database

**Table 6.1:** Mortality (number of deaths and rates per 100,000 resident population) in young people aged 15–19 years by cause of death and year, New Zealand 2007–2011 (n=896 deaths)

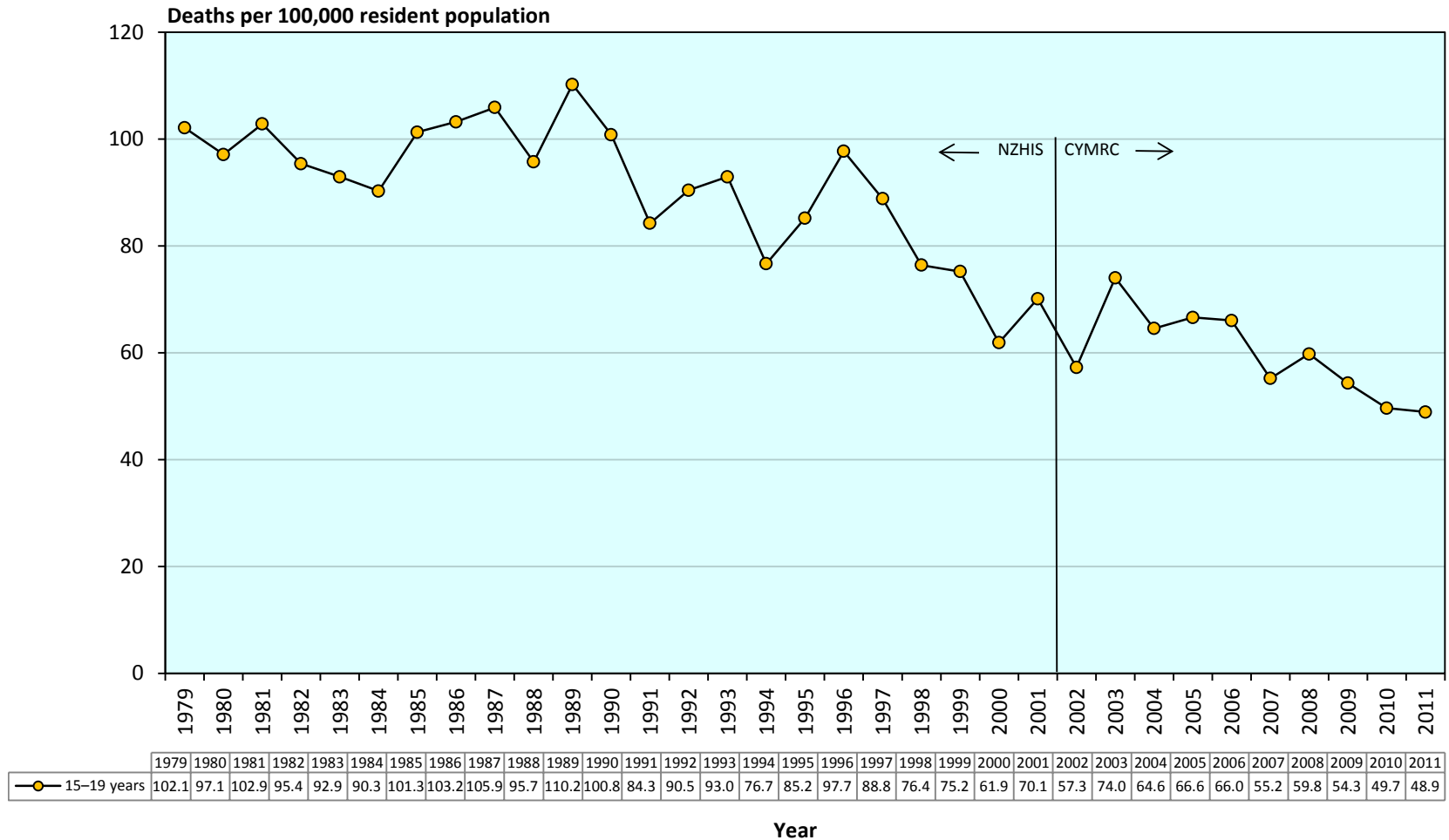
	2007	2008	2009	2010	2011	Total	%	Rate 2007–2011
<b>Medical</b>								
Infectious and parasitic disease	-	-	-	1	3	4	0.4	0.24
Neoplasms	19	11	13	13	14	70	7.8	4.18
Diseases of the blood and blood-forming organs and disorders of immune system	-	-	-	-	1	1	0.1	s
Endocrine, nutritional and metabolic diseases	4	3	5	3	1	16	1.8	0.95
Mental and behavioural disorders	-	-	-	1	-	1	0.1	s
Diseases of the nervous system	9	7	9	3	15	43	4.8	2.57
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	6	11	4	5	6	32	3.6	1.91
Diseases of the respiratory system	2	1	6	4	4	17	1.9	1.01
Diseases of the digestive system	-	-	1	-	1	2	0.2	s
Diseases of the skin and subcutaneous tissue	-	1	-	1	1	3	0.3	0.18
Diseases of the musculoskeletal system and connective tissue	-	-	2	1	-	3	0.3	0.18
Diseases of the genitourinary system	-	1	-	-	-	1	0.1	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	6	8	4	4	3	25	2.8	1.49
Symptoms & abnormal findings not elsewhere classified	-	-	3	1	8	12	1.3	0.72
<b>Total medical</b>	<b>46</b>	<b>43</b>	<b>47</b>	<b>37</b>	<b>57</b>	<b>230</b>	<b>25.7</b>	<b>13.73</b>
<b>Unintentional injury (undetermined intent, legal intervention war)</b>								
Cut/pierce	1	-	1	-	-	2	0.2	0.12
Drowning	3	4	1	11	1	20	2.2	1.19
Fall	2	6	4	2	3	17	1.9	1.01
Fire/hot object or substance	1	-	1	1	-	3	0.3	0.18
Firearm	-	2	1	-	2	5	0.6	0.30
Machinery	-	-	-	-	-	-	-	-
Transport	71	67	55	54	40	287	32.0	17.13
Natural/environmental	-	6	2	-	3	11	1.2	0.66
Overexertion	-	-	-	-	-	-	-	-
Poisoning	4	6	4	6	3	23	2.6	1.37
Struck by, against	-	-	1	1	-	2	0.2	s
Suffocation	3	2	1	2	13	21	2.3	1.25
Other specified, classifiable	-	-	1	2	1	4	0.4	0.24
Other specified, not elsewhere classified	-	-	-	1	-	1	0.1	s
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	-	1	-	-	1	0.1	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>85</b>	<b>93</b>	<b>73</b>	<b>80</b>	<b>66</b>	<b>397</b>	<b>44.3</b>	<b>23.70</b>
<b>Intentional injury</b>								
Assault	3	6	5	4	3	21	2.3	1.25
Suicide	42	53	56	49	44	244	27.2	14.56
<b>Total intentional injury</b>	<b>45</b>	<b>59</b>	<b>61</b>	<b>53</b>	<b>47</b>	<b>265</b>	<b>29.6</b>	<b>15.82</b>
<b>Missing Data</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>4</b>	<b>0.4</b>	<b>0.24</b>
<b>Total</b>	<b>177</b>	<b>196</b>	<b>182</b>	<b>170</b>	<b>171</b>	<b>896</b>	<b>100.0</b>	<b>53.48</b>

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

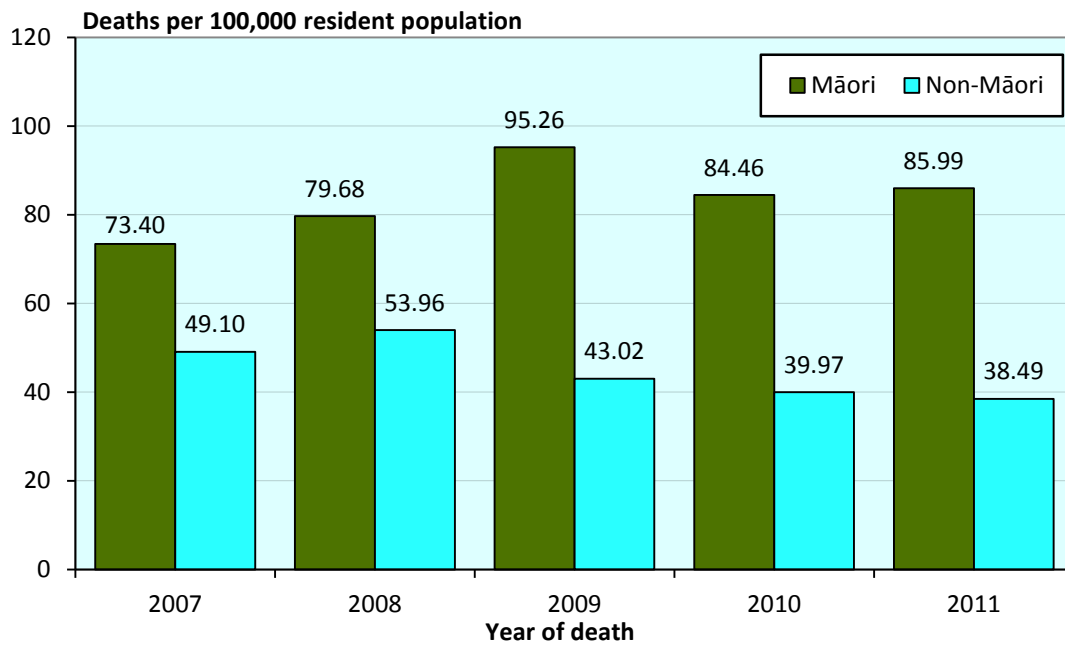


**Figure 6.3:** Mortality (rates per 100,000 resident population) in young people aged 15–19 years, New Zealand 1979–2011



Source: 1979 -2001: NZHIS  
 2002-2011: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population

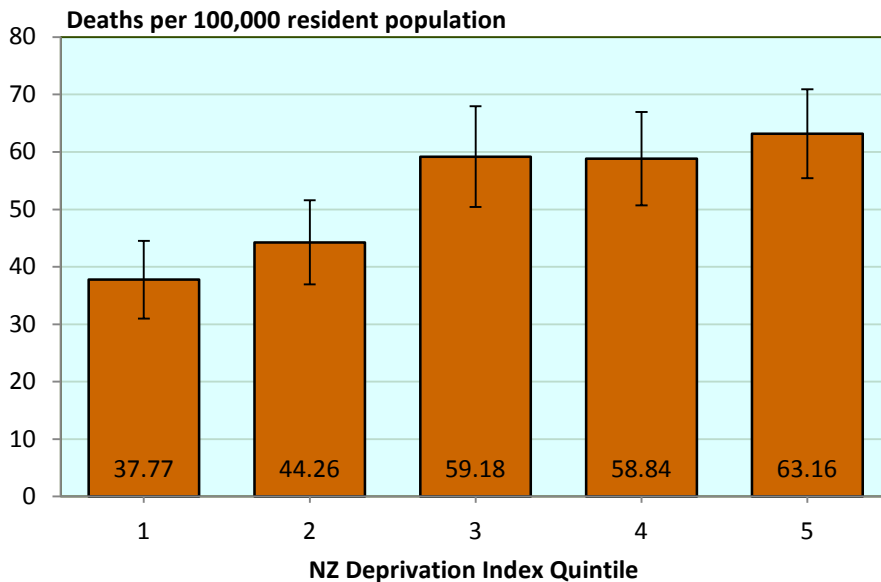
**Figure 6.4:** Mortality (rates per 100,000 resident population) in young people aged 15–19 years for Māori and non-Māori, New Zealand 2007–2011 (n=892\* deaths)



\*Excludes four cases with no available ethnicity data

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2007–2011

**Figure 6.5:** Mortality (rates per 100,000 resident population with 95% confidence intervals) in young people aged 15–19 years by NZ Deprivation Index Quintile, New Zealand 2007-2011 combined (n=891 deaths\*)

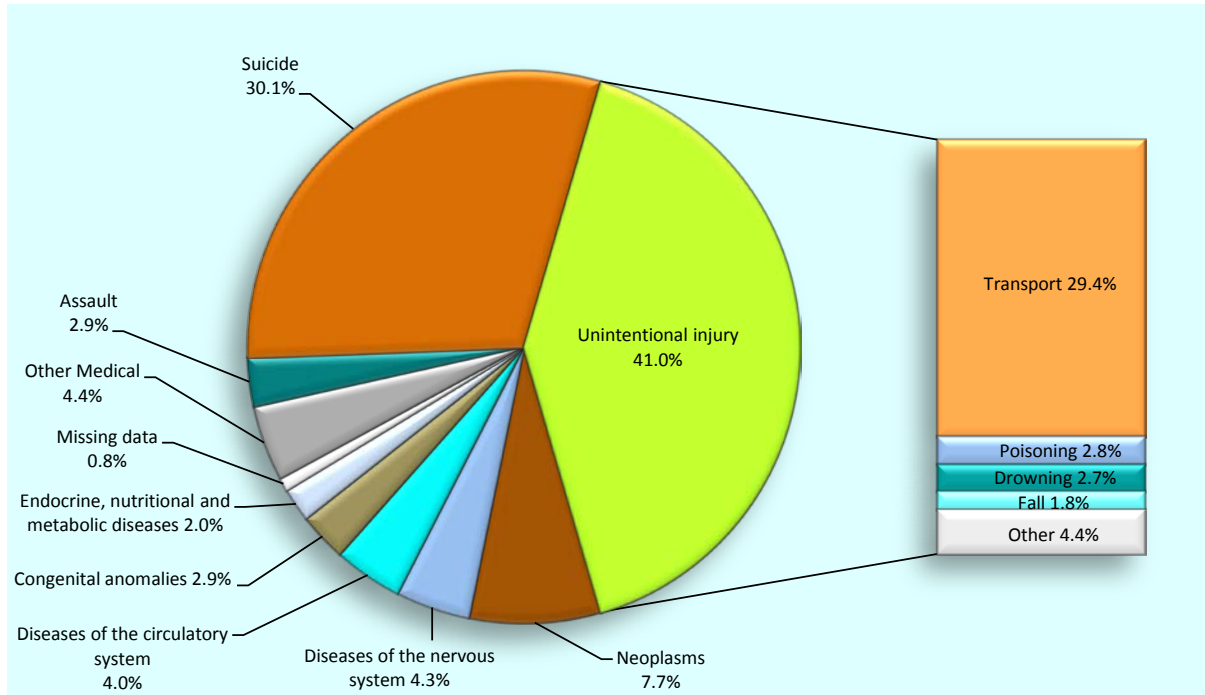


\*Excludes five cases where deprivation data is missing

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2007–2011

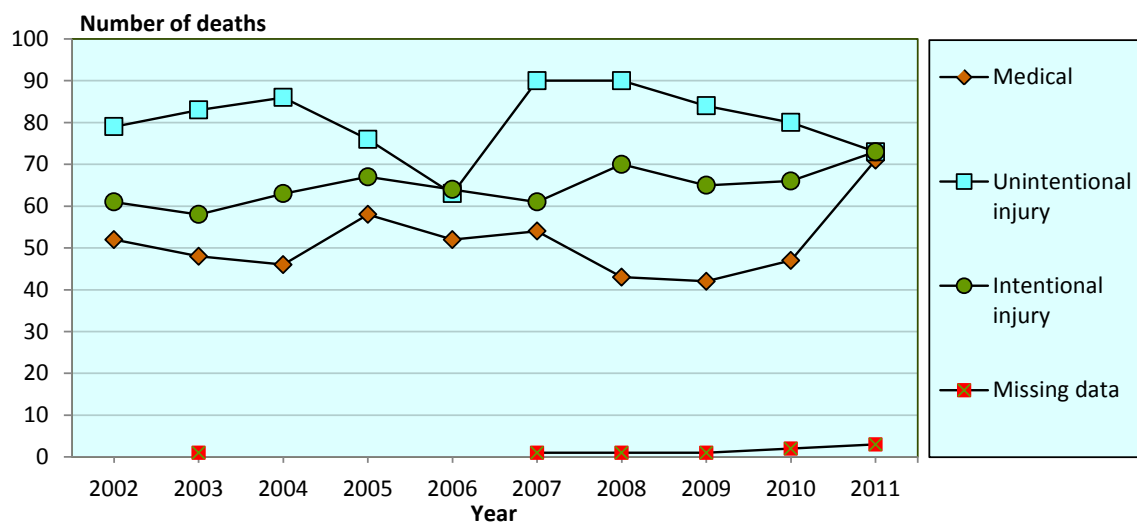
# Young people aged 20–24 years

**Figure 7.1:** Mortality (%) in young people aged 20–24 years by cause of death, New Zealand 2007–2011 (n=1017 deaths)



Source: Mortality Review Database

**Figure 7.2** Mortality (number of deaths) in young people aged 20–24 years by cause of death and year, New Zealand 2002–2011 (n=1974 deaths)



Source: Mortality Review Database

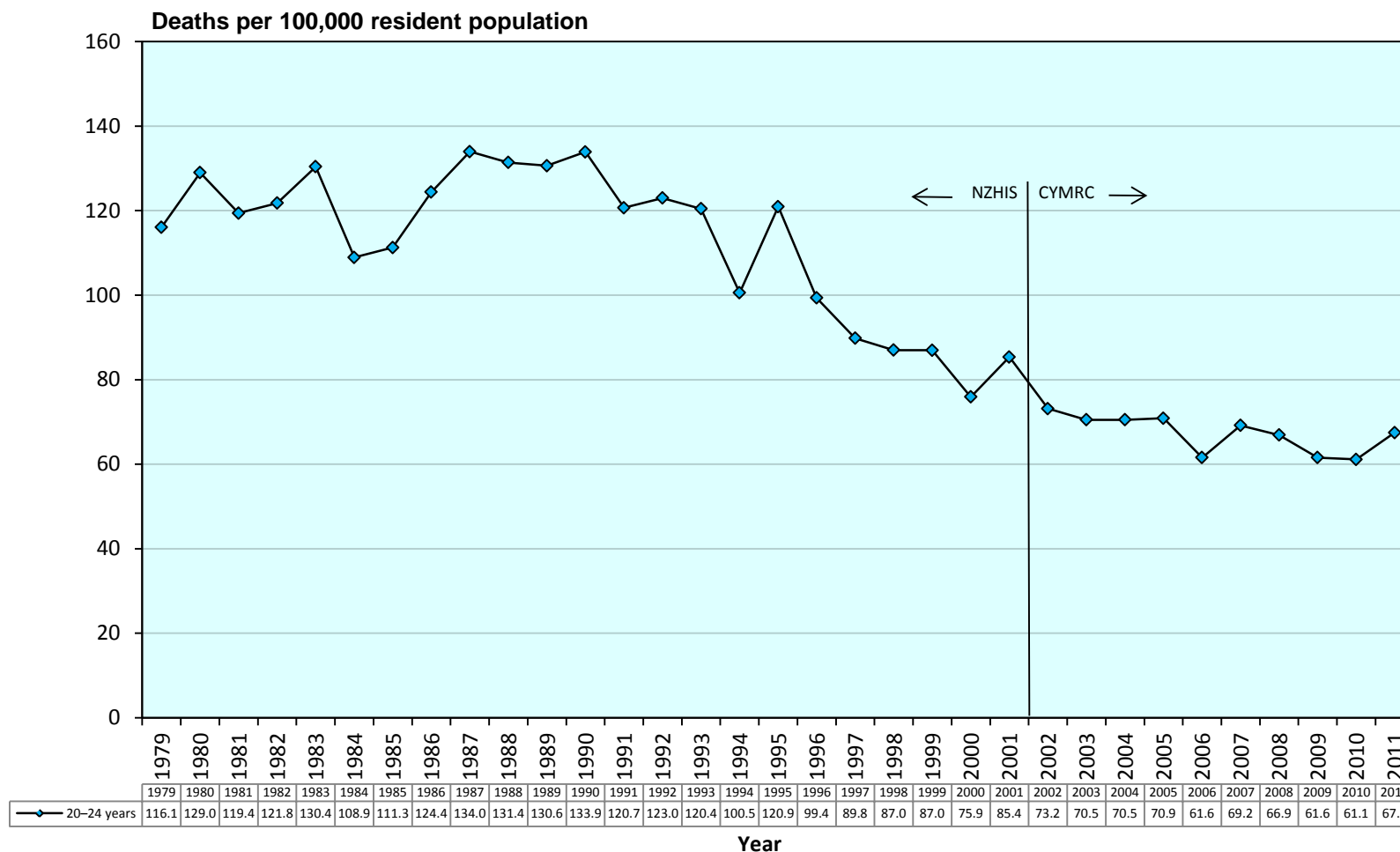
**Table 7.1:** Mortality (number of deaths and rates per 100,000 resident population) in young people aged 20–24 years by cause of death and year, New Zealand 2007–2011 (n=1017 deaths)

	2007	2008	2009	2010	2011	Total	%	Rate 2007–2011
<b>Medical</b>								
Infectious and parasitic disease	1	-	1	-	-	2	0.2	s
Neoplasms	17	17	8	16	20	78	7.7	5.00
Diseases of the blood and blood-forming organs and disorders of immune system	-	-	1	1	-	2	0.2	s
Endocrine, nutritional and metabolic diseases	4	4	3	2	7	20	2.0	1.28
Mental and behavioural disorders	-	-	-	1	-	1	0.1	s
Diseases of the nervous system	10	6	6	8	14	44	4.3	2.82
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	3	8	10	10	10	41	4.0	2.63
Diseases of the respiratory system	1	2	5	3	3	14	1.4	0.90
Diseases of the digestive system	2	-	2	-	1	5	0.5	0.32
Diseases of the skin and subcutaneous tissue	-	-	-	-	1	1	0.1	s
Diseases of the musculoskeletal system and connective tissue	2	1	-	1	1	5	0.5	0.32
Diseases of the genitourinary system	1	1	-	-	2	4	0.4	0.26
Pregnancy, childbirth and the puerperium	2	-	-	-	1	3	0.3	0.19
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	9	4	6	4	6	29	2.9	1.86
Symptoms & abnormal findings not elsewhere classified	2	-	-	1	5	8	0.8	0.51
<b>Total medical</b>	<b>54</b>	<b>43</b>	<b>42</b>	<b>47</b>	<b>71</b>	<b>257</b>	<b>25.3</b>	<b>16.48</b>
<b>Unintentional injury (undetermined intent, legal intervention war)</b>								
Cut/pierce	-	-	1	-	-	1	0.1	s
Drowning	6	3	5	7	6	27	2.7	1.73
Fall	2	6	4	2	4	18	1.8	1.15
Fire/hot object or substance	-	3	2	-	-	5	0.5	0.32
Firearm	-	-	-	-	1	1	0.1	s
Machinery	1	1	1	-	-	3	0.3	0.19
Transport	70	68	57	58	46	299	29.4	19.17
Natural/environmental	-	-	1	-	11	12	1.2	0.77
Overexertion	-	-	-	-	-	-	-	-
Poisoning	5	6	6	9	2	28	2.8	1.80
Struck by, against	1	-	1	1	1	4	0.4	0.26
Suffocation	3	2	3	-	-	8	0.8	0.51
Other specified, classifiable	1	1	3	3	1	9	0.9	0.58
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	1	-	-	-	1	2	0.2	s
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>90</b>	<b>90</b>	<b>84</b>	<b>80</b>	<b>73</b>	<b>417</b>	<b>41.0</b>	<b>26.74</b>
<b>Intentional injury</b>								
Assault	7	5	8	4	5	29	2.9	1.86
Suicide	54	65	57	62	68	306	30.1	19.62
<b>Total intentional injury</b>	<b>61</b>	<b>70</b>	<b>65</b>	<b>66</b>	<b>73</b>	<b>335</b>	<b>32.9</b>	<b>21.48</b>
<b>Missing Data</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>0.8</b>	<b>0.51</b>
<b>Total</b>	<b>206</b>	<b>204</b>	<b>192</b>	<b>195</b>	<b>220</b>	<b>1017</b>	<b>100.0</b>	<b>65.21</b>

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

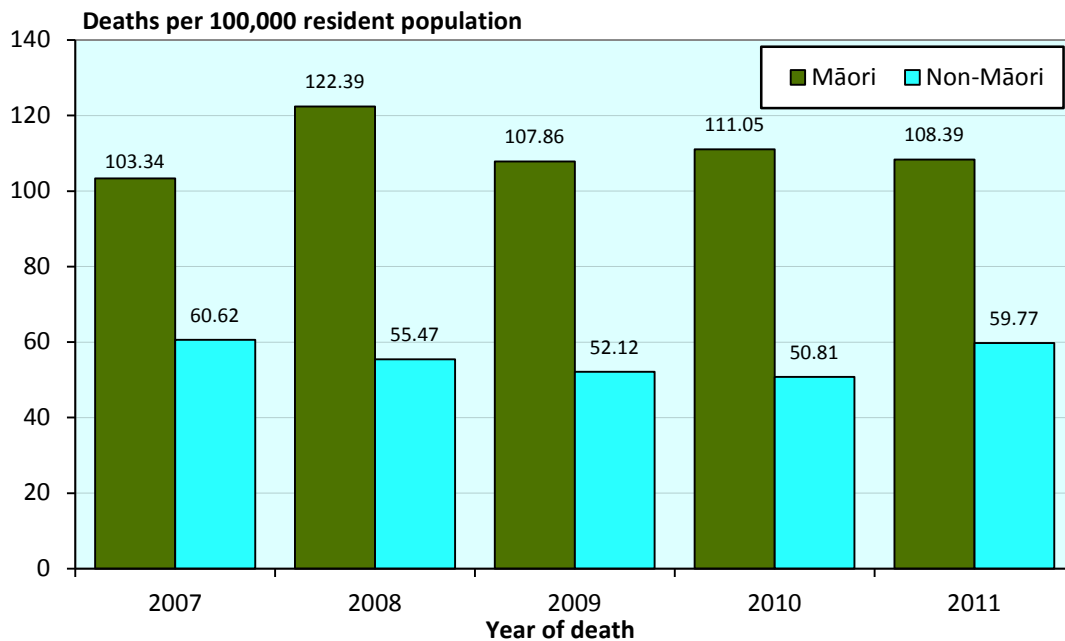
**Figure 7.3:** Mortality (rates per 100,000 resident population) in young people aged 20–24 years, New Zealand 1979–2011



Source: 1979 -2001: NZHIS

2002-2011: *Numerator:* Mortality Review Database; *Denominator:* NZ MRDG Estimated Resident Population

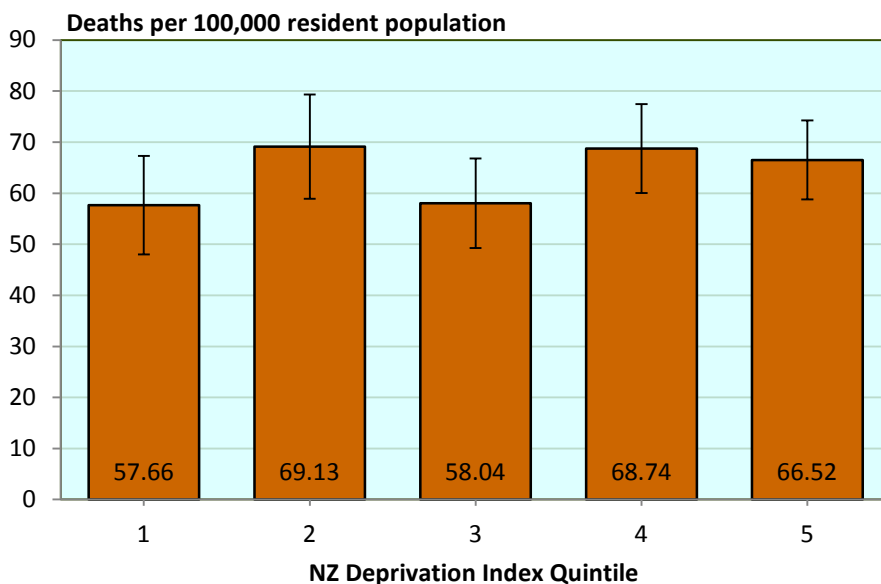
**Figure 7.4:** Mortality (rates per 100,000 resident population) in young people aged 20–24 years for Māori and non-Māori, New Zealand 2007–2011 (n=1009 deaths\*)



\*Excludes eight cases where ethnicity data is missing

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

**Figure 7.5:** Mortality (rates per 100,000 resident population with 95% confidence intervals) in young people aged 20–24 years by NZ Deprivation Index Quintile, New Zealand 2007-2011 combined (n=1006 deaths\*)

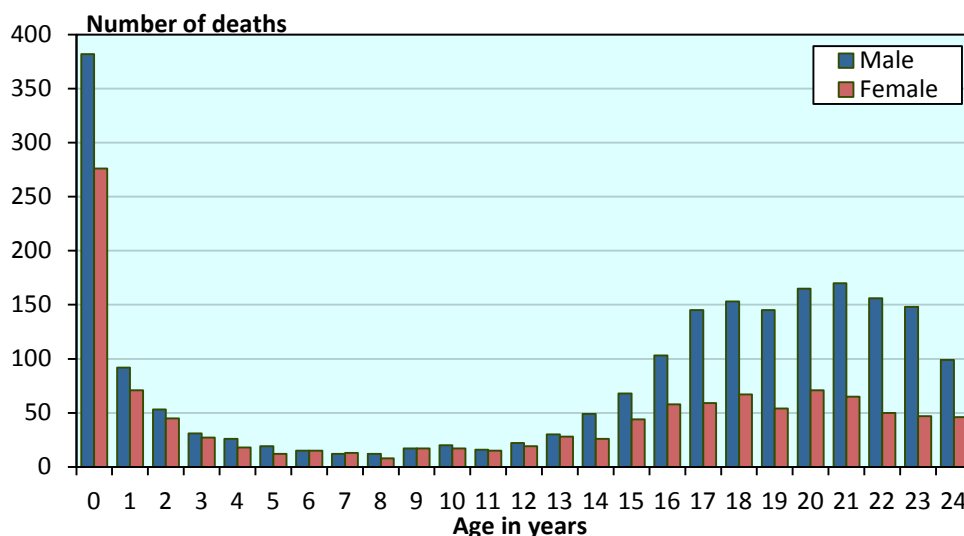


\*Excludes 11 cases where deprivation data is missing

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2007–2011

## Additional Data

**Figure E.1:** Total number of deaths in children and young people aged 28 days to 24 years by gender and year of age, New Zealand 2007–2011 combined (n=3316\* deaths)



\*Excludes one case of indeterminate gender  
Source: Mortality Review Database

**Table E.1:** Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year, New Zealand 1979–2011

Year	< 1 year *	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total
1979	310	149	95	99	322	303	1278
1980	355	138	96	96	305	344	1334
1981	308	160	77	97	315	326	1283
1982	324	129	82	74	288	343	1240
1983	353	111	79	92	279	381	1295
1984	368	118	74	84	272	323	1239
1985	321	112	85	95	308	326	1247
1986	329	135	65	97	312	351	1289
1987	324	112	70	94	325	375	1300
1988	350	116	68	76	295	364	1269
1989	336	111	67	70	335	360	1279
1990	253	120	56	62	299	375	1165
1991	240	99	64	68	241	328	1040
1992	214	102	68	75	249	341	1049
1993	207	109	44	56	250	338	1004
1994	211	102	53	51	203	283	903
1995	204	92	53	60	225	338	972
1996	194	95	54	69	257	270	939
1997	182	102	50	61	240	245	880
1998	137	85	53	75	207	231	788
1999	153	74	40	67	204	226	764
2000	143	88	53	61	169	195	709
2001	145	79	47	66	195	219	751
2002	107	81	48	47	163	192	638
2003	116	66	38	61	216	190	687
2004	152	57	37	53	193	195	687
2005	109	59	41	50	204	201	664
2006	150	60	32	43	207	179	671
2007	142	81	38	53	177	206	697
2008	134	81	35	49	196	204	699
2009	133	77	33	54	182	192	671
2010	124	65	19	45	170	195	618
2011	126	59	15	41	171	220	632

\*This category represents infants 28 days and older, and less than one calendar year in age  
Source: 1979-2001: NZHIS. 2002-2011: Mortality Review Database

**Table E.2:** Mortality (number of deaths) in children and young people aged 28 days to 24 years, by gender and cause, 2007–2011 combined (n=3316 deaths\*)

	Female	Male	Total
<b>Medical</b>			
Infectious and parasitic disease	30	44	74
Neoplasms	126	144	270
Diseases of the blood and blood-forming organs and immune system	6	7	13
Endocrine, nutritional and metabolic diseases	29	43	72
Mental and behavioural disorders	2	1	3
Diseases of the nervous system	70	107	177
Diseases of the eye and adnexa	-	-	-
Diseases of the ear and mastoid process	-	-	-
Diseases of the circulatory system	55	70	125
Diseases of the respiratory system	55	76	131
Diseases of the digestive system	11	7	18
Diseases of the skin and subcutaneous tissue	-	5	5
Diseases of the musculoskeletal system and connective tissue	9	5	14
Diseases of the genitourinary system	2	5	7
Pregnancy, childbirth and the puerperium	3	-	3
Certain conditions originating in the perinatal period	38	44	82
Congenital anomalies	111	134	245
Symptoms & abnormal findings not elsewhere classified	12	16	28
<b>Total medical</b>	<b>559</b>	<b>708</b>	<b>1267</b>
<b>Percentage by gender</b>	<b>44.1%</b>	<b>55.9%</b>	
<b>Unintentional injury (undetermined intent, legal intervention/war)</b>			
Cut/pierce	-	3	3
Drowning	21	73	94
Fall	10	34	44
Fire/hot object or substance	8	12	20
Firearm	-	7	7
Machinery	1	5	6
Transport	199	520	719
Natural/environmental	14	17	31
Overexertion	-	-	-
Poisoning	19	40	59
Struck by, against	4	7	11
Suffocation	17	41	58
Other specified, classifiable	1	13	14
Other specified, not elsewhere classified	-	3	3
Unspecified	1	4	5
Complications of medical and surgical care	2	3	5
Sequelae of surgical and medical care as external cause	-	-	-
<b>Total unintentional injury (undetermined intent, legal intervention/war)</b>	<b>297</b>	<b>782</b>	<b>1079</b>
<b>Percentage by gender</b>	<b>27.5%</b>	<b>72.5%</b>	
<b>Intentional</b>			
Assault	38	44	82
Suicide	156	422	578
<b>Total intentional injury</b>	<b>194</b>	<b>466</b>	<b>660</b>
<b>Percentage by gender</b>	<b>29.4%</b>	<b>70.6%</b>	
<b>Sudden Unexpected Death</b>			
SUD (1-2 years)	6	11	17
SUDI (<1 year)	101	161	262
<b>Total Sudden Unexpected Death</b>	<b>107</b>	<b>172</b>	<b>279</b>
<b>Missing Data</b>	<b>11</b>	<b>20</b>	<b>31</b>
<b>Total</b>	<b>1168</b>	<b>2148</b>	<b>3316</b>
<b>Percentage by gender</b>	<b>35.2%</b>	<b>64.8%</b>	

\* Excludes one case of indeterminate gender

Source: Mortality Review Database



**Table E.3:** Mortality (number of deaths) in children and young people aged 28 days to 24 years among non-New Zealand residents, by cause of death and age group, 2007–2011 combined (n=75 deaths)

Category	< 1 year *	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%
Medical	4	1	1	1	3	3	13	17.3
Unintentional injury	-	-	1	2	17	37	57	76.0
Intentional injury	1	-	-	-	-	1	2	2.7
Unexplained	1	-	-	-	-	-	1	1.3
Missing data	-	-	-	1	-	1	2	2.7
<b>Total</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>20</b>	<b>42</b>	<b>75</b>	<b>100.0</b>

\* This category represents infants 28 days and older, and less than one calendar year in age

Source: Mortality Review Database

**Table E.4:** Non-resident deaths in children and young people aged 28 days to 24 years by country of residence, 2007–2011 combined (n=75 deaths)

Country	Deaths per year 2007–2011					Total deaths	
	2007	2008	2009	2010	2011	Number	%
Australia	2	3	5	3	2	15	20.0
Canada	-	1	-	-	1	2	2.7
China	-	-	-	1	-	1	1.3
Cook Islands	-	-	-	-	1	1	1.3
England	1	3	1	1	-	6	8.0
Fiji	-	-	-	-	1	1	1.3
France	-	-	1	-	1	2	2.7
French Polynesia	1	1	-	2	-	4	5.3
Germany	1	-	-	2	1	4	5.3
India	1	-	-	-	1	2	2.7
Ireland	-	1	-	1	-	2	2.7
Israel	-	-	1	-	3	4	5.3
Japan	-	-	-	-	12	12	16.0
Korea	-	-	-	-	2	2	2.7
Malaysia	-	2	-	-	-	2	2.7
Norway	1	-	-	-	-	1	1.3
Philippines	-	1	-	-	-	1	1.3
Samoa	-	1	-	3	-	4	5.3
South Korea	-	-	1	1	-	2	2.7
Tonga	-	-	-	1	-	1	1.3
Uruguay	-	-	-	1	-	1	1.3
USA	2	-	1	1	-	4	5.3
Vietnam	-	-	-	1	-	1	1.3
<b>Total</b>	<b>9</b>	<b>13</b>	<b>10</b>	<b>18</b>	<b>25</b>	<b>75</b>	<b>100.0</b>

Source: Mortality Review Database

**Table E.5:** Mortality (number of deaths and age-specific mortality rates) by age group and DHB of residence, New Zealand 2007–2011 (n=3317 deaths)

DHB	28 days – < 1 year	Rate*: 28 days – <1 year	1–4 years	Rate‡: 1–4 years	5–9 years	Rate‡: 5–9 years	10–14 years	Rate‡: 10–14 years	15–19 years	Rate‡: 15–19 years	20–24 years	Rate‡: 20– 24 years	Total	%	Rate‡ per DHB	Death outside DHB of residence	Death in DHB of residence	% resident deaths outside DHB
Northland	33	2.82	20	48.50	9	16.04	10	15.38	45	73.75	35	95.23	152	4.6	55.92	20	132	13.2
Waitemata	51	1.29	35	25.07	19	10.44	21	10.66	64	30.74	97	51.30	287	8.7	30.04	93	194	32.4
Auckland	58	1.74	26	24.10	13	10.22	14	10.37	60	37.72	67	28.21	238	7.2	29.75	39	199	16.4
Counties Manukau	115	2.61	50	32.25	20	10.05	33	15.54	92	42.98	131	74.31	441	13.3	44.06	105	336	23.8
Waikato	75	2.67	36	36.99	13	10.22	29	20.81	100	70.12	97	74.92	350	10.6	52.71	28	322	8.0
Bay of Plenty	40	2.67	25	46.84	6	8.18	20	24.73	62	80.74	66	126.52	219	6.6	62.30	53	166	24.2
Lakes	30	3.62	10	33.74	5	12.86	8	19.07	32	81.30	26	95.41	111	3.3	59.89	25	86	22.5
Tairāwhiti	9	2.25	6	43.40	-	-	5	24.25	21	109.12	14	109.20	55	1.7	61.63	9	46	16.4
Taranaki	18	2.24	6	22.69	5	14.04	3	7.52	29	69.45	18	62.04	79	2.4	43.71	12	67	15.2
Hawke's Bay	33	2.80	22	52.86	8	14.38	17	27.82	38	63.25	42	106.83	160	4.8	59.36	23	137	14.4
Whanganui	16	3.54	8	53.98	2	s	5	20.45	16	63.32	19	113.84	66	2.0	61.86	15	51	22.7
MidCentral	20	1.70	19	45.73	8	14.51	9	14.85	41	59.51	55	89.81	152	4.6	50.80	34	118	22.4
Wairarapa	6	2.22	3	31.49	-	-	1	s	8	56.00	15	181.71	33	1.0	53.44	9	24	27.3
Capital & Coast	31	1.55	19	26.31	5	5.77	5	5.55	39	36.09	41	30.80	140	4.2	27.44	26	114	18.6
Hutt Valley	34	3.11	12	30.54	2	s	5	9.35	18	31.08	23	52.66	94	2.8	36.72	18	76	19.1
Nelson Marlborough	8	0.94	6	19.08	6	14.55	3	6.39	34	71.41	24	74.46	81	2.4	38.94	18	63	22.2
West Coast	-	-	4	54.05	2	s	1	s	8	73.03	11	144.55	26	0.8	52.39	2	24	7.7
Canterbury	47	1.43	34	26.97	10	6.39	29	17.08	87	47.21	132	70.15	339	10.2	39.53	25	314	7.4
South Canterbury	5	1.57	5	44.40	1	s	3	14.98	25	123.61	18	154.57	57	1.7	68.72	9	48	15.8
Otago	14	1.34	10	24.91	3	5.86	11	19.10	39	48.92	49	52.92	126	3.8	37.99	9	117	7.1
Southland	16	1.95	7	26.19	3	8.65	10	26.33	38	104.37	37	99.76	111	3.3	61.29	19	92	17.1
<b>Total</b>	<b>659</b>	<b>2.07</b>	<b>363</b>	<b>32.22</b>	<b>140</b>	<b>9.66</b>	<b>242</b>	<b>15.31</b>	<b>896</b>	<b>53.47</b>	<b>1017</b>	<b>65.11</b>	<b>3317</b>	<b>100.0</b>	<b>43.00</b>	<b>591</b>	<b>2726</b>	

\* rate per 1000 live births

‡ rate per 100 000 resident population

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZHIS Live Births 2007–2011 for 28 days to less than one year, NZ MRDG Estimated Resident Population 2007–2011 for ages 1-24 years.